INSTITUTE OF GAS TECHNOLOGY
AFFILIATED WITH ILLINOIS INSTITUTE OF TECHNOLOGY
CHICAGO 16, ILLINOIS

GAS ABSTRACTS INDEX

VOLUME 4

1948

AUTHOR INDEX

A

Abernethy, R. F. See Cooper, H. M.

Ackely, R. A. Method of an Apparatus for Measuring the Composition of Gas 155

Adam, N. K. Fundamental Aspects. Principles of Penetration of Liquids Into Solids 218

Adams, A. M. Automatic Temperature Control 137

Adams, C. H. See Comings, E. W.

Adams, D. P. See Douglass, R. D.

Adams, E. $4 Billion Marked for 1948 Expansion 120-121

Adams, J. W. See Moore, J. H.

Adkins, H. and Krsek, G. Preparation of Aldehydes from Alkenes by the Addition of Carbon Monoxide and Hydrogen with Cobalt Carbonyls as Intermediates 98; Comparison of Nickel Catalysts in the Hydrogenation of B-Naphthol 99;—and Rae, D. S., Davis, J. W., Hager, G. F. and Hoyle, K. Sulfur as a Promoter for a Nickel Catalyst in Dehydrogenation 100

Adlam, T. N. Some Problems I've Met in Radiant Heating 122

Akers, W. W. and White, R. R. Kinetics of Methane Synthesis 179

Albright, J. C. Natural Gasoline Plant Increases Output by Using Propane Refrigeration Unit 194

Alden, R. C. and Clark, A. Appraisal of Gas Synthesis Operations 128; See also Brown, G. G.; Helmers, C. J.

Alexander, M. See Corbin, N.

Alexander, N. W. See Trainer, R. P.

Algren, A. B. Ground Temperature Distribution with a Floor Panel Heating System 108

Alicino, J. E. Microvolumetric Method for Determination of Sulfur in Organic Compounds 73

Allcock, H. J. and Jones, J. R. The Nomogram (book) 106

Ambrose, E. R. See Sporn, P.

Ambrose, Z. C. More Propane for Less Money 87; High Pressure Gas Measurement 116

American Gas Association. Gas Facts (book) 44

American Gas Association Rate Committee. Report on Customer Load Characteristic Study 140

American Gas Association Testing Laboratories. Investigation of Extent of Gas Flame Impingement Allowable for Satisfactory Combustion 2; Research in Design of Preventing Closure of Gas Pilot Burner Primary Air Openings by Dust and Lint 108; Research in Fundamentals of Design Features Affecting Oven Performance 142; Research in Broiler Design 142

Amon, S. See Hirschler, A. E.

Amundson, N. R. A Note on the Mathematics of Adsorption in Beds 243

Anderson, R. B. Separation of Gaseous Mixtures (patent) 151;—and Hall, W. K., Harlan, H. and Seligman, B. Studies of the Fischer-Tropsch Synthesis. II. Properties of Unreduced Cobalt Catalysts. 33;—and Hall, W. K. and Hofer, L. J. E. Studies of the Fischer-Tropsch Synthesis. IV. Properties of Reduced Cobalt Catalysts 175;—and McCartney, J. T., Hall, W. K. and Hofer, L. J. E. Kieselguhrs: Suitability as Carriers in Catalysts 34; See also Weller, S.

Andrews, H. W. See Gross, W. F.

Anson, I. A. Cost of One Brake-Horsepower 219

Appleby, W. G. See Johnston, R. W. B.

Arant, J. B. Basic Principles in Process Control 117; Estimating Gathering System Meter Run Sizes 117

Archer, F. G. See Eilerts, C. K.

Aries, R. S. Synthetic Alcohol from Petroleum 90

Armitage, S. The Development of the Dry Gas Meter 19

Armstrong, R. M. Heat Exchanger Features Unusual Fin Design 61

Arnell, J. C. and Henneberry, G. O. Permeability Studies. III. Surface Area Measurements of Carbon Blacks 134; See also Carman, P. C.

Ash, S. H. and Felegy, E. W. Analysis of Complex Mixtures of Gases 237

Attaway, D. New Gasoline Plant for Carthage Field 127

Atwater, H. A. Firing Boiler with Natural Gas 144

Atwood, K. See Reitmeier, R. E.

Avery, W. H. and Morrison, J. R. Infra-red Spectra of Hydrocarbons—II. Analysis of Octane Mixtures by the Use of Infra-red Spectra Obtained at Low Temperatures 17

B

Bailey, C. W. See Dinneen, G. U.

Bailey, G. B. Gas Analyzer (patent) 217

Bailey, R. V. and Coates, J. Simplified Mult-Component Fractionation Calculations. Part I, II, III 102; Simplified Multi-Component Fractionation Calculations 244

Bainbridge, J. R., Eisenklam, P. and Scanlan, P. G. The Moisture Content of Brown Coal by Distillation 156

Baker, M. O. See Johnston, R. W. B.

Baker, W. L. Strong Domestic Industry Essential to National Security 1

Ball, M. W. Fuels for Today and Tomorrow 23

Ball, J. S. See Dinneen, G. U.

Barclay, K. M. See Wright, C. C.

Barnes, K. B. North Cowden West Texas' 1st High-Pressure Gas Injection Project on Cooperative and Pool-Wide Basis 151

Barnes, R. B., Gore, R. C., Stafford, R. W. and Williams, V. Z. Qualitative Organic Analysis and Infrared Spectrometry 132

Barr, V. L. See Eilerts, C. K.

Barrer, R. M. Fluid Flow in Porous Media 218

Barthel, D. E. Safe Maintenance and Operation of Standby Plants 231

Bartlett, H. J. Check Valves, Traffic Cops of the Pipe Lines 76

Barton, K. See Breston, J. N.

Basak, N. G. See Ghosh, J. C.

Bass, E. See Steyermark, A.

Basu, A. N. and Glenn, R. A. Chemical Nature of Coal Hydrogenation Products. II. Progress in Further Chromatography of Primary Coal Hydrogenation Products on Silica Gel 236

Batchelder, C. D. and Rockwell, R. A. Automatic Control on the Portland-Montreal Pipe Line 19; 42

Batchelder, H. R. See Riesz, C. H.

Battelle Memorial Institute See Case, S. L.

Bauer, R. Weather-Gas Sendout Relationship 173

Baugh, H. M. See Reitmeier, R. E.

Baumeister, T. See Sporn, P.

Bayhi, J. F. See Ewing, S. P.

Beale, E. S. L. and Docksey, P. Allowance for Losses Due to Exit, Entrance, and Fittings for a Gas Flowing in a Pipe Under High Pressure Drop 197

Beattie, J. A. and Edward, D. G. The Vapor Pressure, Orthobaric Densities and Critical Constant of 2, 2, 4-Trimethyl-Pentane 241

Beaudry, J. B. Blender Efficiency 183
Beckett, C. W., Pitzer, K. S. and Spitzer, R. The Thermodynamic Properties and Molecular Structure of Cyclohexane, Methylcyclohexane, Ethylcyclohexane and the Seven Dimethylcyclohexanes 38 See also Kilpatrick, J. E.
Beckman, A. O., McCullough, J. D. and Crane, R. A. Microdetermination of Carbon Monoxide in Air 176; See also McCullough, J. D.
Beckman, P. See Mapstone, G. E.
Bednars, C., Luntz, D. M. and Bland, R. E. A Study of Operating Variables in Thermofor Catalytic Cracking 112
Beeck, O., Otvos, J. W., Stevenson, D. P. and Wagner, C. D. The Isomerization of Propane with C^{13} in One End Position 181; See also Otvos, J. N.; Stevenson, D. P.
Belcher, R. The Anodic Oxidation of Coal. Part I. Introduction and Preliminary Experiments 209; Part IV. Examination of the Ulmic Acids 229; Part V. Miscellaneous Experiments 229
Bell, A. D. See Fookson, A.
Bell, H. S. and Homes, C. K. Aluminum Pipe Lines for Oil and Gas 61
Bell, R. M. See Hill, H.
Bellamy, C. R. The Economy of Natural Gas as an Enriching Medium 69
Bencze, S. Power Turbines for Natural Gas Expansion 66
Bennett, A. R. and Harrison, D. Use of the Calyx Burner to Determine Combustion Conditions 208
Bennett, E. O. Cycling at High Pressures vs. Depletion and Cycling at Low Pressure 51, 67
Bennett, H. A., Jr. See Reitmeier, R. E.
Benson, R. E. See Courouleau, P. H.
Benson, S. W. Critical Densities and Related Properties of Liquids 159
Berg, C. and James, I. J. Rate of Approach to Equilibrium of Fractionating Columns 101;—and McKinnis, A. C. Effect of Temperature on Liquid Phase Activity Coefficients 178;—and Parker, F. D. Determination of Aromatics and Olefins in Hydrocarbon Mixtures 131
Berger, L. B. Determination of Carbon Monoxide by Absorption in the Haldane-Type Gas-Analysis Apparatus 13
Bergmann, E. See Weizmann, C.
Berkebile, J. M. Testing for Carbon Monoxide 155
Berle, A. K., DeCamp, L. Inventions and Their Management (book) 44
Beuther, H. See Offutt, W. C.
Bingham, D. H. and Franklin, R. E. Thermal Expansion of Coals and Carbonized Coals 191
Bissell, E. S. The Economics of Agitator Selection 137;—and Hesse, H. C., Everett, H. J. and Rushton, J. H. Design and Utilization of Internal Fittings for Mixing Vessels 43
Bissey, L. T. New Design Household Incinerator Eliminates Smoke and Odor 167
Bittner, V. F. Method for Determining Pumping Pressures by Utilizing Square Mile Estimates 123
Black, C., Joris, G. G. and Taylor, H. S. The Solubility of Water in Hydrocarbons 180
Blade, C. C. See Hughes, E.
Blade, O. C. See McKinney, C. M.
Blaize, R. N. Vacuum Distillation Equipment 205
Blanc, W. V., Guest, P. G., Von Elbe, G. V. and Lewis, B. Ignition of Explosive Gas Mixtures by Electric Sparks. I. Minimum Ignition Energies and Quenching Distances of Mixtures of Methane, Oxygen and Inert Gases; II. Theory of the Propagation of Flame from an Instantaneous Point Source of Ignition 37
Bland, R. E. See Bednars, C.
Bland, W. F. Design Details, Operating Results of First Commercial Hypersorber 176; Two Decades of Research put Industry on Top of Synthetic Fuels Problem 71
Blatchley, C. G. Simple Jet Devices Prevent Freezing of Sealing Water in Gas Holders 103
Blohm, C. L., Riesenfeld, F. C. and Frazier, H. D. Removal of Acidic Constituents from Gases (patent) 174; See also Chapin, W. F.
Bloom, E. G., Mohler, F. L., Lengel, J. H. and Wise, C. E. Metastable Transitions in Mass Spectra of Fifty-Six Hydrocarbons 201
Bludworth, J. E. Industrial Oxidation of Lower Aliphatic Hydrocarbons 111; Chemicals from Petroleum 152
Bodle, W. W. See Deschner, W. W.
Boester, C. F. See Raber, B. F.
Bolander, G. (Aboveground) Tanks 194; Installation Methods and Moisture Problems in (Aboveground) Tanks 213
Bolles, W. L. Measurement of Gas Temperature by Means of Thermocouples 96
Bonilla, C. F. Heat Transfer with Extended Surface 161;—and Eisenberg, A. A. Heat Transfer to Boiling Styrene and Butadiene and Their Mixtures with Water 204; See also Dunn, W. E., Jr.; Edwards, D. A.
Boomer, E. H., Gillies, A. and Hugill, J. I. Low Temperature-Low Pressure Fractionation of Natural Gas 132;—and Naldrett, S. N. The Oxidation of Methane at High Pressures 39
Bos, L. B. See Komarewsky, V. I.
Boselli, M. Possibilities of Continuous Distillation 83
Bosworth, R. C. L. Chemical Similarity in Heterogeneous Catalysis 40
Boucher, D. F. and Lapple, C. E. Pressure Drop Across Tube Banks 60
Bowden, F. P. and Gurton, O. A. Initiation of Explosions by Grit Particles 241
Boyd, D. M., Jr. Fractionation Instrumentation and Control. Part I. 244
Boyd, W. T. See White, R. R.
Boyer, R. L. Modern Gas Pipe Line Compressors 86
Boyle, W. E. and Hoyt, P. R. Application of Combustion Controls to a Process Heater 245
Boynton, W. W. Most Eastern Refiners Pushing Propane Extraction 9
Bradley, C. B. and Stone, J. F. Low-Temperature Insulation 220
Brady, L. J. Determination of Thiophene, Carbon Oxysulfide, and Carbon Disulfide in Producer Gas 156; Determination of Small Amounts of Oxygen in Gases 238
Branson, J. O. Control and Maintenance of Continuous Vertical Retorts 210
Bray, L. Practical Considerations in Process Design of Fractionators 116
Bremmer, J. G. M. and Thomas, G. D. The Standard Free Energies of Formation of Gaseous Organic Compounds: A Group Method of Summation 178; The Extension of Thermodynamic Values from the Aliphatic to the Aromatic Series 135
Brennan, J. M. See Stanbery, L. J.
Bresee, J. C. See Drickamer, H. G.
Breston, J. N. and Barton, K. Field Test of Corrosion Inhibitor for Low pH Flood Water 22
Brewer, R. E., Reynolds, D. A., Steiner, W. A. and Van Gilder, R. D. Carbonizing Properties of Coking Coals 169
Bridges, G. L., Gernes, D. C. and Thompson, H. L. Development, Production and Performance of Water Gas Conversion Catalyst 130
Brinkley, S. R. Contact Times of Continuous-Flow Reacting Systems with Volume Change 74

Brinn, M. S., Friedman, S. J., Gluckert, F. A. and Pigford, M. A. Heat Transfer to Granular Materials 162
Bristow, A. L. Pressure Control and Other Problems of Long Line Gas Dispatching 174
Brooks, F. R. See Murdock, R. E.; Nelson, F. M.
Brooks, W. B. See Griswold, J.
Brown, B. K. and Gunness, R. C. Future Fuels—Liquid and Gaseous 121
Brown, C. See Savage, R. H.
Brown, G. G., Katz, D. L., Oberfell, G. G. and Alden, R. C. Natural Gasoline and Volatile Hydrocarbons. (section 1) (book) 187
Brown, H. D. Process for the Recovery of Oil from Shales (patent) 111
Brown, J. D. The Most Suitable Form of Gas Appliances 227
Brown, R. A., Taylor, R. C., Melpolder, F. W. and Young, W. S. Mass Spectrometer Analysis of Some Liquid Hydrocarbon Mixtures 72
Brown, R. L. The Measurement of Coal Strength 230; —and Hawksley, P. G. W. The Internal Flow of Granular Masses 135
Brown, T. W. Gas Cooling 84
Brown, W. F. Principles of Accident Prevention 189
Browning, L. C. See Kummer, J. T.
Brzozowski, T. J. Recent Trends in Gas Producer Practice 231
Bruges, E. A. See Geyer, E. W.
Buchanan, B. B., Grimes, M. D., Smith, D. E. and Heinrich, B. J. Determination of Nitrogen in Volatile Organic Compounds by Semimicro-Dumas Method 238
Bugge, P. E. and Kerlogue, R. H. The Determination of the Surface Area of Powders by Means of Low Temperature Absorption Isotherms 56
Burgoyne, J. H. and Williams-Leir, G. Limits on Inflammability of Gases in the Presence of Diluents 241
Burnman, L. M. See Eilerts, C. K.
Burns, A. F. and Hyde, W. S. Gas-Fired Lumber Drying Kilns 167
Butt, M. T. See Streiff, A. J.

C

Caesar, C. H. The Suspensoid Catalytic Cracking Process 12
Camp, E. Q. Equipment Protection for Cracking Units 11
Campbell, D. L. Separation and Purification of Gases (patent) 196
Cardwell, P. H. Chemical Removal of Clays 67
Carlson, H. and Fitz, O. D. Costs and Prices—A Paramount Gas Industry Challenge 140
Carlson, H. A. See Eilerts, C. K.
Carlson, H. M. Flow Meter for Coal-Air Mixtures 208
Carman, P. C. Some Physical Aspects of Water Flow in Porous Media 218;—and Arnell, J. C. Surface Area Measurements of Fine Powders Using Modified Permeability Equations 179
Carroll, J. R., Jr. Radiation and Total Heat Transfer in Panel Heating 143
Carroll, J. W. Review of Reforming of Hydrocarbons in Water Gas Sets. Part I—Reforming of Refinery Oil Gas, Liquefied Petroleum Gas and Oil 148
Carter, D. V. The Formation and Operation of Cooperative Projects in Secondary Recovery 152
Case, S. L., Jackson, L. R. and Lund, R. J. Induction Heating in Relation to Industrial Gas Heating 144
Carsey, J. B. Basic Geology of the Gulf Coastal Area and Continental Shelf 171
Casper, J. C. Natural-Gasoline and Cycling Plants Will Break Own Record in 1948 46; Natural-Gasoline Cycling-Plant Production May Reach 17 Million Gallons Daily 79; Pipe-Line Movement of Natural Gas in 1948 Will Break All Previous Records 207
Cellan-Jones, G. Increased Benzole Yields from Coke Ovens 209
Chabre, G. and Millen, J. A. Nitrogen Purging of Pipe-Lines and Repairs Through Controlled Fire 195
Chapin, W. F. and Blohm, C. L. Purification and Dehydration of Gases 151
Cheetham, H. S. The Use of Hydrocarbon Oil in the Manufacture of Town Gas 231
Cheney, A. J., Jr. See Winding, C. C.
Cherry, R. H. Determination of Water Vapor 239
Chien, J. Y. Kinetic Analysis of Irreversible Consecutive Reactions 178
Child, R. S. Utilization of Natural Gas in the Chemical Field 16
Cholette, A. Heat Transfer 59
Christiansen, E. B. See Pettyjohn, E. S.
Christie, A. G. An Appraisal of the Gas Turbine for Power Plants 27
Churchill, J. F. See Ulmer, R. C.
Cichelli, M. T. Design of Temperature Measuring Elements 185; See also Edwards, D. A.
Clapp, J. T. See Comings, E. W.
Clark, A. See Alden, R. C.; Helmers, C. J.
Clark, B. The House-Heating Outlook 227
Clark, E. L., Golden, P. L., Whitehouse, A. M. and Storch, H. H. High Pressure Reactions 40
Clarke, F. E. Determination of Carbon Dioxide in Water 19
Clason, C. E. Acidizing Procedure 50
Clauser, H. R. Heating Metals by Induction and High-Speed Gas Methods 168
Clegg, F. R. See Norris, W. E.
Clifford, E. A. How to Determine LP-Gas Burner Capacities 167, 190
Coates, J. See Bailey, R. V.
Coggeshall, N. D. See Saier, E. L.
Cohen, L. and Jessel, R. A New Method of Testing Draft Diverters 227
Cohen, P. and Corey, R. C. Behavior of Ash in Pulverized-Coal-Fired Furnaces 81
Coley, J. R. See Komarewsky, V. I.
Collins, R. D. and Newby, M. P. Determination of Mixing of Gas Streams by the Infra-Red Gas Analyzer 201
Comings, E. W., Adams, C. H. and Shippe, E. D. High Velocity Vaporizers 60;—and Clapp, J. T. and Taylor, J. F. Air Turbulence and Transfer Processes 162
Conrad, A. L. Determination of Aromatic Compounds in Petroleum Products 199
Considine, D. M. See Nuneviller, E. D.
Cooke, P. W. and Haresnape, J. N. The Effect of Steam on Some Alumina Transitions 36
Cooper, C. and Henshaw, D. M. Purification and By-Product Recovery—A Review 147
Cooper, G. A. S. Economic Factors for Distribution Design 123
Cooper, H. M., Tarpley, E. C. and Abernethy, R. F. Determination of Moisture in Coal with the Brabender Semiautomatic Tester 177; Heating-Value Loss of Coal on Air-Drying 83
Corbin, N., Alexander, M. and Egloff, G. Gaps in Physical Constants Data for Hydrocarbons 57
Corey, R. C. See Cohen, P.
Cory, M. T. and Thacher, F. B. Carbon—A Blast Furnace Refractory 62
Costanzo, F. E. See Peifer, N. P.
Coull, J. See Li, Y. M.; Yu, K. T.
Coulson, E. A. and Herington, E. F. G. Fractional Distillation. I. The Selection of Test Mixtures for Estimating the Efficiency of Fractionating Columns 218

Courouleau, P. H. and Benson, R. E. Activated Carbon (Manufacture, Capacity of Adsorption, Use in Solvent Recovery) 82
Craig, J. A. Maximum Recovery of Liquefied Petroleum Gases 31
Cramer, A. H. Gas Utility Underground Pipe Corrosion Mitigation Practices 62; Pipe Corrosion Mitigation Practices 165
Crane, R. A. See Beckman, A. O.; McCullough, J. D.
Crank, J. See Wood, A. M.
Crawford, B. L., Jr., and Parr, R. G. Simple Expressions for the Heat Capacities of Gases 97
Crawford, F. W. Method for Analyzing Gas (patent) 35
Craxford, S. R. The Fischer-Tropsch Synthesis with Cobalt Catalysts 71; The Chemistry of the Fischer-Tropsch Synthesis 11
Crichton, J. A. See Gruy, H. J.
Crosby, S. H. The Natural Gas Investigation and After—2. The Fight in Congress—Battle of the Bills 225
Crouthamel, C. E. and Diehl, H. Gas Analysis Apparatus Employing the Velocity of Sound 155
Culshaw, G. W. and Garside, J. E. Recent Studies of Aerated Burner Flames 24, 46
Curran, B. E. Combination Casingstrings 234
Currens, J. E. C. Mechanization of Gas Service Construction 120
Cuthrell, H. H. What Natural Gas Can Do For the Manufactured Gas Industry 9
Czuha, M. See Laitinen, H. A.

D

Dade, L. E. Peak Shaving Control 233
Daigle, E. C. and Lee, J. H. Calculating Results of Infrared Analyses of Gaseous Hydrocarbon Mixtures 217
Daniels, F. Outlines of Physical Chemistry 221
Darling, P. E. Internally Insulated Pressure Vessels, Piping, for High Temperature Service 103
Darling, R. A. Economics of Gas-Diesel Engine 47
Davies, F. D. Care in Design Gives Bulk Plant Outstanding Safety Features 87
Davis, J. D. See Naugle, B. W.
Davis, J. W. See Adkins, H.
Davis, S. G. See Wright, S. R.
Dazeley, G. H. The Preparation of Lubricating Oils from Hydrocarbon-Synthesis Products. Part I 90
Dean, C. H. Principles of Proper Venting 25
DeCamp, L. S. See Berle, A. K.
DeCoriolis, E. G. New Gas-Making Process on the Line 84
Deegan, C. J. Total Liquid Proven Reserves Hit Nearly 26 Billion Barrels 45
Deitz, V. R. and Robinson, H. C. Heat Transfer into Cylindrical Columns of Bone Char 162
Deloney, J. E. See Wiley, J. T.
Demorest, D. J. See Eddinger, R. T.
Denison, I. A. Chemical Aspects of Underground Corrosion and Corrosion Prevention 186
Dent, F. J. Use of Oxygen for Town Gas Manufacture 85, 124
Denton, S. W. See Wiley, J. T.
Deringer, H. A Steam-Saving Process for Benzole Extractions 28
Deschner, W. W. and Bodle, W. W. Nitrogen Removal from Natural Gas. Part I 110
Dick, T. A. The Colorimetric Determination of Less Than 0.001% Sulfur as Carbon Disulphide in Benzoles 15
Diehl, H. See Crouthamel, C. E.
Dimock, W. R. See Wright, S. R.
Dingemans, P. See Korvezee, A. E.
Dinneen, G. U., Bailey, C. W., Smith, J. R., Ball, J. S. Shale Oil Naphthas: Analysis of Small Samples by the Silica Gel Absorption Method 55
Dixon, A. W. The Design and Operation of Vertical Retort Gas-making Plants for Small Works—I 125; Part II 125
Docksey, P. See Beale E. S. L.
Dodge, B. F. See Lund, G.
Dornbrook, F. L. Developments in Burning Pulverized Coal 144
Dougherty, W. A. Significance of Ten Years Under the Natural Gas Act 120, 141; The Federal Power Commission—and Natural Gas 223
Dougill, G. See Pexton, S.
Douglass, R. D. and Adams, D. P. Elements of Nomography (book) 44
Downs, C. R. Impact of Tonnage Oxygen on American Chemical Industry 192
Dresser, T. See Smith, R. B.
Drickamer, H. G., O'Brien, V. J., Bresee, J. C. and Ockert, C. E. The Effect of Certain Column Variables on Thermal Diffusion 76
Dryer, W. P. Calculations for High Vacuum Systems 18; Rough Evacuation of Vacuum Systems 40
Dudley, C. C. Burner Adjustment 189
Duff, D. M. Daily Capacity of Gulf Coast's 73 Gas Processing Plants More Than 4½ Million Gallons 141; 85 Million Cubic Feet of Casinghead Gas Daily Utilized by Shell in Two Newly Completed Plants 233; Completion of Major Pipe Lines Will Relieve Tanker Shortage 226
Duffy, T. H. Total Carbon in Bituminous Coal 55; Hydrogen in Bituminous Coal 94
Dunn, W. E., Jr. and Bonilla, C. F. Heat Transfer with Extended Surface 162
Dushman, S. Development of High Vacuum Techniques 163
Dybdal, E. C. See Wenner, R. R.

E

Eaheart, A. E. Memphis Carbosealing Experience 115
Eastwood, S. C., Hornberg, C. V. and Potas, A. E. Thermofor Catalytic Cracking Unit 34; Eastwood, S. C. and Potas, A. E. Thermofor Pyrolytic Cracking Process 198
Eaton, M. See Oliver, G. D.
Eberhart, F. F. World LP-Gas Markets Wait on Free Exchange 166
Eck, J. E. Peak Gas Economics 173
Eckles, J. D. Installing the Gas Floor Furnace 2, 25
Eddinger, R. T. and Demorest, D. J. The Oxidation of Coal by Electrolysis 148
Edmister, W. C. Hydrocarbon Absorption and Fractionation Process Design Methods. Part 5. Equations and Charts for Absorption and Stripping 101; Part 6. The Sherwood Graphical Method for Absorption and Stripping Calculations 101; Part 7. Applications of Sherwood Method 18; Part 8. Comparison of Absorption Calculation Methods 59; Part 9. Proposed Absorption-Stripping Calculation Method 59; Part 10. Fractionation Fundamentals—Two Component Systems 101; Part 11. Binary Distillation Calculations 102; Part 12. Preliminary Steps in Multi-Component Calculations 114; Part 13. Plate-to-Plate Multicomponent Fractionation Calculation Methods 161; Part 14. Minimum Plates and Reflux Limits of Design 181; Part 15. Short Cut and Empirical Equilibrium Plate Calculation Methods 182; Part 16. Proposed Multicomponent Fractionation Calculation Method 218; Applications of Thermodynamics to Hydrocarbon Processing. Part 5. Non-Hydrocarbon Fluids 41; Part 6. Illustrative Problems and Solutions 41; Part 7. Hydrocarbon Properties for Derivations 60; Part 8.

Vapor Pressures and Equations of State 102; Part 9. P-V-T Correlations for Hydrocarbon Systems 102; Part 10. Pseudo-Critical for Mixtures 164; Part 11. Derivations for Graphical P-V-T Correlations 164; Part 12. General Thermodynamic Properties 203; Effective Absorption and Stripping Factors for Multicomponent Fractionation Calculation 181

Edwards, D. A., Bonilla, C. F. and Cichelli, M. T. Condensation of Water, Styrene, and Butadiene Vapors 136

Edwards, D. G. See Beattie, J. A.; Lewis, H. C.

Egloff, G. Chemicals from Petroleum and Natural Gas 16; Products from Petroleum Halogenation 236; See also Corbin, N.

Ehrhardt, C. H. See Webb, G. M.

Eilerts, C. K., Barr, V. L., Mullens, N. B. and Hanna, B. Phase Relations of a Gas Condensate Fluid at Low Temperature, Including the Critical State 97; Eilerts, C. K., Carlson, H. A. and Mullens, N. B. Effects of Added Nitrogen on Compressibility of Natural Gas. Part I 127; Part II 152; Eilerts, C. K., Green, F. and Archer, F. G. Alloying Steels for Corrosion Resistance to Gas-Condensate Fluids—Part I 138; —and Hanna B. and Burnman, L. M. Part II 185

Eischens, R. P. and Selwood, P. W. Structure and Activity of the Chromium Aluminum Oxide Catalyst System 157

Eisenberg, A. A. See Bonilla, C. F.

Eisenberg, H. Cleaning of High Pressure Gas Mains 86

Eisenklam, P. See Bainbridge, J. R.

Eld, A. C. Pressure Drop in Fractionating Towers 245

Elenbaas, J. R. and Katz, D. L. A Radial Turbulent Flow Formula 58

Elliott, J. H. See Stow, F. S., Jr.

Ellis, S. G. Electron Microscopy. Part I 201; Oil Industry Uses for Electron Microscopy, Part II 240

Eltenton, G. C. The Mass-Spectrometric Detection of Free Radicals 112

Emert, F. L. Lion Oil Company Starts Operation of TCC Unit 55

Emmett, P. H. Adsorption and Poresize Measurements on Charcoals and Whetlerites 233; See also Joyner, L. G.; Kummer, J. T.

Erich, L. C. See Ritter, H. L.

Erickson, H. A. Piping System Construction Costs 184

Eriksen, A. See Reed, R. M.

Everett, H. J. See Bissell, E. S.

Ewing, S. P. and Bayhi, J. F. Cathodic Protection of Casings in Loudon Pool 138

F

Faber, W. F. The Dayton-Faber Oxygen Oil Gas Process for City Application 192

Fagin, K. M. How High Pressure Gas Blowouts in a Texas Field Were Brought Under Control 105

Fairfield, R. G. See Kehde, H.

Falck, E. The Fuel Outlook 223

Farrar, L. D. A Well-Planned Service Changeover to Natural Gas 213

Farson, B. What Anhydrous Ammonia Demand Means to Butane-Propane Industry 50

Feachem, G. and Swallow, H. T. S. Alumina Catalysts for Vapor Phase Organic Dehydrations, Deaminations, etc. 157

Fehling, H. R. Combustion with Oxygen and Oxygen-Enriched Air 168

Feifel, E. The Cyclone Dust Separator 19

Felegy, E. W. See Ash, S. H.

Fieldner, A. C. Frontiers of Fuel Technology 129

Findlay, R. A. From the Ground Up 52

Finlayson, T. C. and Townend, F. S. Gas Production in Perspective 140

Finnegan, T. J. and Smith, H. L. Determination of Moisture Content of Coal by Means of Pulverizer Heat Balance 21

First, J. J. See Riesz, C. H.

First, M. W. and Silverman, L. Factors in the Design of Cyclone Dust Collectors 184

Fisher, E. See Shaw, J. A.

Fitz, O. D. See Carlson, H.

Fletcher, B. J. Welded Aluminum Alloy Pipe Lines 196

Flood, E. A. See Tomlinson, R. H.

Fogle, M. C. See Offutt, W. C.

Fookson, A. and Bell, A. D. Sulfur Compounds in Gasoline 215

Forziati, A. F. and Rossini, F. D. Alkylbenzenes in the C_9 Fraction From Seven Representative Crude Petroleums 57

Foster, A. L. Small Fluid Cat Cracker Handles High-Sulfur Charge Efficiently 12; Preplanning Turnarounds, Use of Alloys Shorten Downtime, Extend Onstream Periods for Operating Distillation Equipment 165

Foster, J. F. Production of Water Gas From Pulverized Coal 91

Fox, W. M. Mechanical Handling at Gasworks and Coke Ovens 169

Fraas, F. and Ralston, O. C. Dielectric Constant in Air-Ambient Electrostatic Separation 132

Francis, A. W. Properties of Alkylbenzenes 112; Liquid-Phase Alkylation of Aromatic Hydrocarbons 243

Frank, J. C. See Kehde, H.

Franklin, R. E. A Note on the True Density, Chemical Composition and Structure of Coals and Carbonized Coal 191; See also Bingham, D. H.

Frazier, H. D. See Blohm, C. L.

Freberg, C. R. See Pease, W. C.

Frederickson, A. F. See Grant, N. J.

Freeman, R. S. See Rescorla, A. R.

French, C. C. J. See Rose, H. E.

Frey, F. E., Kerley, R. V. and Lovell, W. G. Knock Characteristics of 16 Pure Gaseous Hydrocarbons 203

Friedal, R. A. See Orchin, M.

Friedman, S. See Pelipetz, M.

Friedman, S. J. See Brinn, M. S.

Fuidge, G. H. Development of Domestic Gas Space Heating 228

Fuller, D. L. See Hanford, W. E.

Funk, E. J., Jr. Premixed Combustion for Efficient Process Heating 82

Furter, M. F. and Steyermark, A. Pressure Regulator for Use in Microdetermination of Carbon and Hydrogen 94

Furth, M. A. Prevention of Corrosion in Refinery Heat-Exchanger Equipment 185

Fusner, G. R. The Gas Turbine With a Waste Heat Boiler 228

G

Gallagher, G. G. Control of Narrow-Boiling Range Fractionating Columns 22, 61, 77

Galusha, A. L. Gas Producer (patent) 146

Garner, F. H. Liquid Fuels and Chemical Products From Petroleum and Coal 32

Garner, J. B. The Liquefied Gas Industry 172

Garretson, O. L. Is Tank Size the Whole Answer? 8; Which Gas Is Today's Choice 195

Garrison, M. E. Balanced Economies in Gas Plant Design 213

Garside, J. E. See Culshaw, G. W.

Gas Research Board. 51st Report of the Joint Research Committee of the Research Board and the University of Leeds 94, 109; The Underground Gasification of Coal 149

Gashorn, J. C. See Gross, W. E.
Gauger, A. W. Physical Chemistry and the Technology of Fuels 113
Gernes, D. C. See Bridges, G. L.
Geyer, E. W. and Bruges, E. A. Tables of Properties of Gases (book) 222
Ghosh, J. C. and Basak, N. G. Chromium Oxide as a Catalyst Promoter for Fischer-Tropsch Synthesis at Medium Pressures 159; Ghosh, J. C., Rama Das Guha, S. and Roy, A. N. Catalytic Dehydrogenation of Ethylbenzene (3) 16
Gilg, F. X. Burning Coke Breeze on a Chain Grate Stoker 4
Gillies, A. See Boomer, E. H.
Ginnings, D. C. See Osborne, N. S.
Glasstone, S. See Laidler, K. J.
Glenn, R. A. See Basu, A. N.
Gluckert, F. A. See Brinn, M. S.
Goddin, C. S. and Thornton, D. P., Jr. Low Temperature Carbonization of Coal Produced Most of Japs' Synthetic Oil 54
Godel, A. Fluidization Used in Making Activated Carbon 170
Goglia, M. J. See Lewis, H. C.
Gohr, E. J. See Murphree, E. V.
Golden, P. L. See Clark, E. L.
Goldtrap, W. A. and Jones, E. L. Self-Contained Naphtha Polyforming Correlation 235
Goodman, J. B. See Parry, V. F.
Goodrich, B. D. Conversion of Pipe Lines From Oil to Gas Transmission 196; Centrifugal Compressors Come of Age 126
Goodwin, R. D. See Spillane, L. J.
Gordon, A. S. Pyrolysis of Methane Flowing Through a Porcelain Tube in the Region 1000° 100
Gordon, K. The Melchett Lecture, 1947—Hydrogenation in the Fuel and Chemical Industries 33, 54
Gore, R. C. See Barnes, R. B.
Gough, L. B. Gas Research Produces Results 207
Govinda, M. A. See Simon, M. J.
Grant, N. J., Frederickson, A. F. and Taylor, M. E. A Summary of Heat Resistant Alloys From 1200° to 1800°F. Part I 118
Grant, R. R. Testing Manufacture of Oil Gas 29
Grant, W. C. Lower Costs, Better Performance Seen in LP-Gas Flight 28
Grater, N. See Morgan, F.
Gray, L. L. See Meissner, H. P.
Green, F. See Eilerts, C. K.
Greenfield, S. H. See Meissner, H. P.
Griffin, R. W. Instrumentation in Gasworks and Coke Ovens 164
Griffiths, L. W. Introduction to the Theory of Equations (book) 106
Grimes, M. D. See Buchanan, B. B.
Griswold, J. and Brooks, W. B. High Range Vapor Pressures and Antoine Equation Constants of Some C_3 to C_5 Hydrocarbons 39
Gross, W. E. and Gashorn, J. C. An Instrument for Determining the Volume and Bulk Density of Granular Materials 94
Gross, W. F. and Andrews, H. W. Prevention of Corrosion in Sour Wells with Organic Inhibitors 235
Grumer, J. See Von Elbe, G.
Grummer, M. See Leva, M.
Gruy, H. J. and Crichton, J. A. A Critical Review of Methods Used in Estimation of Natural Gas Reserves 174, 234
Guest, P. G. See Blanc, W. V.
Gunness, R. C. Future Liquid Fuels 166; See also Brown, B. K.
Gurton, O. A. See Bowden, F. P.
Guthrie, B. See Lankford, J. D.
Gwathmey, A. T. See Leidheiser, H., Jr.

H

Hachmuth, K. and Hanson, G. H. Butane Dehydrogenation Pilot Plant Investigations 153
Hachmuth, K. H. See McCullough, G. W.
Hackerman, N. and Shock, D. A. Protective Layer Formation in Condensate Wells 86
Haddad, G. J. See Whitlock, M. H.
Hadden, S. T. Vapor-Liquid Equilibria in Hydrocarbon Systems. Part I. 76
Haensel, V. and Sterba, M. J. Pyrolysis of Hydrocarbons 198
Hager, G. F. See Adkins, H.
Hagerbaumer, W. A. and Lee, R. Combustion of Coke Deposit on Synthetic-Bead Cracking Catalysts 26
Haggenmacher, J. E. Heat and the External Work of Vaporization of Twenty-two Hydrocarbons 97
Hall, W. K. See Anderson, R. B.
Hamilton, L. F. and Simpson, S. G. Calculations of Analytical Chemistry (book) 105
Hanford, W. E. and Fuller, D. L. Acetylene Chemistry 160
Hanna, B. See Eilerts, C. K.
Hanson, G. H. and Harp, H. L. Phillips Butane Dehydrogenation Process 153; See also Hachmuth, K.
Harbert, W. D. Vaporization of Petroleum Fractions 100; Economic Distillation Design: A Study of the Comparative Importance of the Distillation Variables 113; Distribution Curves—I. Introduction and Some Special Cases 243
Haresnape, J. N. See Cooke, P. W.
Hargrove, R. H. Importance of Natural Gas in the National Economy 224
Harlan, H. See Anderson, R. B.
Harp, H. L. See Hanson, G. H.
Harris, F. E. Furnace and Fuels for Heat Processing Metals 109; Needs in Furnace Development and Fuel Utilization for the Metal Industry 190
Harris, H. S. See Riddle, H. S.
Harrison, A. D. Steam Generation at 600 Psi 700 Deg. F. as Applied to Carburetted Water Gas Plant 4
Harrison, D. See Bennett, A. R.
Harrison, H. C. Mechanical Development in the Gas Industry 211; Some New Types of Mechanical Equipment 231
Hart, J. C. See Kehl, W. L.
Hartough, H. D. Color Reactions of Thiophene Compounds with Ceric Nitrate Alcohol Reagent 200
Harvey, R. J. See Nelson, W. L.
Hawkins, M. F. Method of Least Squares Applied to Bottom Hole Pressure Gage Calibration 125
Hawksley, P. G. W. See Brown, R. L.
Hawley, R. W. See Lof, G. O. G.
Headington, C. E. See Taylor, R. C.
Heaton, E. The Behavior of Refractory Materials in Carbonizing Plant: Observations in Continuous Vertical Retorts 49
Heinrich, B. J. See Buchanan, B. B.
Helmers, C. J., Clark, A. and Alden, R. C. Catalytic Treatment of Synthetic Gasoline 236; Helmers, C. J. and Johnson, P. H. Cycloversion Process 32
Hemminger, C. E. See Voorhies, A., Jr.
Hendee, R. W. Dynamic Growth Features Natural Gas Industry 24
Henneberry, G. O. See Arnell, J. C.
Henriques, H. J. Evaluation of Vapor Phase Reactions with Solid Catalysts 42
Henry, H. M. Some Economic Realizations of High Btu Oil Gas Part I 229; Part II 229
Hense, H. J. Fact Finding for Sound Standards 24
Henshaw, D. M. See Cooper, C.
Herald, A. E. See Thornton, V.
Herbruck, C. G. See Revell, G. L.

Herington, E. F. G. See Coulson, E. A.
Herndon, K. See McKee, H. C.
Herr, F. A. LP-Gas Piping and Appliance Regulations 65; New Development in Gas Range Venting with Mechanical Draft Hood 108
Hess, H. O. High-Speed Gas Heating for Production Forging 82
Hesse, H. C. See Bissell, E. S.
Heyn, A. H. A. See Mills, I. W.
Hibshman, H. J. See Knox, W. T., Jr.
Hightower, J. V. Chemcel Petrochemicals 173
Higuchi, T. See Laitinen, H. A.
Hill, H. and Bell, R. M. A Versatile Calorimeter for Specific Heat Determinations 131
Hill, N. W. See Needham, L. W.
Hilliard, A. and McKee, J. H. The Development of Refractories for High Temperature Industrial Processes 139
Hills, C. W., Jr. Control of Continuous Fractionation Columns 164
Himus, G. W. Fuel Testing (book) 187
Hinckley, J. A., Jr., and Sheppard, H. R., Jr. New Method for Testing Catalysts 16
Hindin, S. G. A Rapid Calculation of the Specific Dispersion of Saturated Hydrocarbons 73
Hindley, H. R. See Jessel, R.
Hirschler, A. E. and Amon, S. Adsorption: a Tool in the Preparation of High-Purity Saturated Hydrocarbons 40
Hoare, M. F. and Linnett, J. W. The Mechanism of Flame Propagation 218
Hoerl, A. E. Ignition of Gases and Vapors by Sparks 37
Hofer, L. J. E. Introduction to the Carbides of Iron and Their Physical and Chemical Properties 159; —and Peebles, W. C. X-ray Diffraction Studies of the Action of Carbon Monoxide of Cobalt-Thoria-Kieselguhr Catalysts 11; See also Anderson, R. B.; Weller, S.
Hofer, T. P. Coring Dually Completed Wells 51
Hoffecker, W. A. See Lipkin, M. R.
Hoffman, D. S. See Montgomery, C. W.
Hofsess, R. W. Cities Service Gas Compacts Soil to Form Base for Heavy Engine Foundations in Hugoton Field 212
Hoftijzer, P. J. See Van Krevelen, D. W.
Hoge, A. W. See Kelso, G.
Holmes, C. K. See Bell, H. S.
Holtman, A. G. A Method of Removing Dust From Gas Mains 146, 191
Holzman, G. See Sease, J. W.
Hopton, G. U. Removal of Hydrogen Sulphide From Coal Gas 123, 124
Hornbeck, G. A. Continuous Spectra and OH Absorption in Carbon Monoxide-Oxygen Explosions 202
Hornberg, C. V. See Eastwood, S. C.
Horsfield, S. W. The Catalytic Cracking Process as a Means of Peak Load Shaving 145
Horton, L. and Randall, R. B. The Occurrence of Sulfur and Nitrogen in Coal 7
Hoss, R. L. Calculation of the Effect of Pressure Maintenance on Oil Recovery 69
Hotchkiss, A. G. See Webber, H. M.
Hougen, O. A. Applied Kinetics and Equilibrium 241
Houtman, J. P. W. Simple Chemical Analysis of Iso-Butene in Binary Mixtures with Other Olefins 131
How, H. Short-Cut Estimation Welded Process Vessels 104
Howard, A. Design Features of a 4800-HP Locomotive Gas-Turbine Power Plant 144
Howard, F. A. Conversion of Coal to Oil and Gas 142; Synthetic Fuels 236
Hoyle, K. See Adkins, H.
Hoyt, P. R. See Boyle, W. E.
Hudson, J. C. The Atmospheric Corrosion of Ferrous Metals and Its Prevention 185
Huebler, J. Radiative and Convective Heat Transfer Rates Pertaining to Heating Processes 136
Huffman, H. M. See Oliver, G. D.
Hughes, E. and Blade, C. C. Bibliography of Reports Containing Analyses of Crude Oils by the Bureau of Mines Routine Method 175
Hughes, T. W. The Corrosion of Mains and Services 30
Hugill, J. T. Tonnage Oxygen for Chemical Industry 29; See also Boomer, E. H.
Hulsberg, H. A. Instrument Maintenance 220
Humphreys, C. G. R. Early Development in Pulverized Coal Firing—Part 1 211; Part 2 232
Humphreys, C. J. See Plyler, E. K.
Hutcheson, J. C. Gasoline Plant Process Water Treatment 216
Hutchinson, A. J. L. Control and Operation of Deethanizers 42
Hutchinson, F. W. See Raber, B. F.
Hyde, W. S. See Burns, A. F.

I

Ingersoll, A. C. See Ingersoll, L. R.
Ingersoll, L. R., Zobel, O. H. and Ingersoll, A. C. Heat Conduction (with Engineering and Geological Applications) (book) 246
Ipsen, H. N. Gas Cyaniding Small Parts 122
Irwin, M. See Reynolds, J. G.

J

Jackson, L. R. See Case, S. L.
Jackson, R. and Sarjant, R. J. Special Steels for the Petroleum Industry 220
Jacobsen, A. E. and Sullivan, W. F. Method for Particle Size Distribution for the Entire Subsieve Range 14
James, I. J. See Berg, C.
James, L. S. Instrumentation and Automatic Control 184, 230
Jamison, E. A. The Use of Propane and Butane Gases 152
Jares, J. Disposal of Oil and Varnish Fumes by Combustion 81
Jenny, F. J. Production of Manufactured Gas Using Gas Turbine Cycles 147
Jessel, R. and Hindley, H. R. Factors in the Design of Pin-hole Gas Burners 25, 47, 64; See also Cohen, L.
Jnanananda, S. High Vacua—Principles, Production and Measurement (book) 221
Joffe, J. Fugacities in Gas Mixtures 241
Johnsen, S. E. J. See Roberts, R. H.
Johnson, A. W. Acetylenic Compounds. Volume I. Acetylenic Alcohols (book) 186
Johnson, E. G. How To Calculate Heat Losses 25
Johnson, H. A. Periodic Heat Transfer at the Inner Surface of a Homogeneous Wall 114
Johnson, P. H. See Helmers, C. J.
Johnson, W. E. Economic and Technical Aspects of the Heat Pump 43
Jones, C. C. Automatic Overloading of District Regulator Stations 172
Jones, E. L. See Goldtrap, W. A.
Jones, G. W., Kennedy, R. E. and Spolan, I. Effect of Hydrocarbons and Other Gases Upon the Explosibility of Acetylene 37; See also Scott, G. S.
Jones, J. Use of Solid CO_2 in Purging Gas-Holder 148
Jones, J. R. See Allcock, H. J.
Jones, P. J. Condensate Production and Cycling. Part 11. Producing and Injection Wellhead Pressures 8;

Part 12. Composition of Cycled Production 30; Part 13. When To Stop Cycling 51; Part 14. Economics of Condensate Production 67; Part 18. Water Injection Into a Stratigraphic Trap 150; Petroleum Production. Volume III. Oil Production by Water (book) 188; Volume IV. Condensate Production and Cycling (book) 188

Jones, S. and Speers, J. A. Investigation on Corrosive Matter in Meters 105, 138

Jones, S. P. Design for Carburetion 67

Johnson, G. B. Chimney Liner Corrosion Resulting From Gas-Fired Furnaces 62

Johnson, W. and Grater, N. The Gas-Fired Steam Boiler in Industry 168

Johnston, R. W. B., Appleby, W. G. and Baker, M. O. Determination of Olefins in Gasoline 217

Jordan, L. L. Secondary Recovery Adds To Arkansas Reserves 194

Joris, G. G. See Black, C.

Josefowitz, S. See Othmer, D. F.

Joyner, L. G. and Emmett, P. H. Differential Heats of Adsorption of Nitrogen on Carbon Blacks 239

Jurtz, S. S., Jr. See Mills, I. W.

K

Kallam, F. L. Engine Jacket Water Cooling Systems 171

Karassik, I. J. Process Engineer's Guide to the Centrifugal Compressor. Part I 7; Part II 7; Part III 30; Part IV 50; Part V 67

Karr, H. M. See Wilson, J. G.

Kastrop, J. E. Electric Watchdogs for Small Gas Compressor 43

Katz, D. L. See Brown, G. G.; Elenbaas, J. R.; McKetta, J. J., Jr.

Katz, S. See Parent, J. D.

Kaulakis, A. F. See Murphree, E. V.

Kay, W. B. Liquid-Vapor Equilibrium Relations in Binary Systems 201

Kayan, C. F. Fin Heat Transfer by Geometrical Electrical Analogy 183

Kayser, P. Natural Gas Transportation 107

Kearby, K. K. Catalytic Reforming of Hydrocarbons (patent) 193

Kehde, H., Fairfield, R. G., Frank, J. C. and Zahnstecher, L. W. Ethylene Recovery Commercial Hypersorption Operation 182

Kehl, W. L. and Hart, J. C. Quantitative Determination of Sulfur in Hydrocarbons by X-ray Absorption 238

Kelso, E. A. and Synder, J. A. Hydrocarbon Conversion at High Temperatures and Pressure 153

Kelso, G., Peavy, C. D., Myers, G. D. and Hoge, A. W. Design and Operation of Leonard TCC Unit 235

Kemball, C. and Taylor, H. S. The Catalytic Decomposition of Ethane and Ethane-Hydrogen Mixtures 98

Kemler, E. N. Design of Earth Heat Source Systems 167;—and Kulik, N. Research Aspects of the Heat Pump 80; See also Oglesby, S., Jr.

Kennedy, H. T. Chemistry of Drilling Fluids 126

Kennedy, R. E. See Jones, G. W.

Kennedy, R. N. See McIntire, O. R.

Kerley, R. V. See Frey, F. E.

Kerlogue, R. H. See Bugge, P. E.

Kidd, W. H. See Philbrick, G. A.

Kilham, J. K. Energy Transfer From Flame Gases to Solids 40

Kilpatrick, J. E., Werner, H. G., Beckett, C. W., Pitzer, K. S. and Rossini, F. D. Heats, Equilibrium Constants and Free Energies of Formation of the Alkylcyclopentanes and Alkylcyclohexanes 56

Kimball, F. B. and Scott, J. A. Refinery Tools for Producing High Octane Gasoline 153

King, J. G. Gas Research Board—Final Report on a Survey of the Distribution of Organic Sulphur Compounds in Town Gas 5

Kinney, S. P. Hot Blast Stove Gas Burner Give Soft Mellow Flame 47

Kintz, G. M. Study Fuel Characteristics To Be Safe 52

Kirk, R. E. and Othmer, D. F. Encyclopedia of Chemical Technology. Vol. I (book) 186

Kite, R. P. and Roberts, E. J. Fluidization in Non-Catalytic Operations 40

Klebes, J. H. Radiant Heating 25

Klinkenberg, A. Numerical Evaluation of Equations Describing Transient Heat and Mass Transfer in Packed Solids 245;—and Mooy, H. H. Dimensionless Groups in Fluid Friction, Heat and Material Transfer 40

Kneisel, O. Liquid Flow Characteristics of a Pipe Line and a Control Valve 219

Kniel, L. and Slager, W. H. Ethylene Purification by Absorption 17

Knowles, J. W. Heat Transfer with Surface Boiling 204

Knox, W. T., Jr., Weeks, R. L., Hibshman, H. J. and McAteer, J. H. Liquid-Liquid and Vapor-Liquid Extraction 41

Komarewsky, V. I., Bos, L. B. and Coley, J. R. Vanadium Oxide, a Hydrogenation Catalyst 99; See also Riesz, C. H.

Konzo, S. and Roose, R. W. Panel Heating or Convection 190

Korvezee, A. E. and Dingemans, P. Maxima in Vapor Pressure Curves 242

Kosior, K. E. A. Determination of Hydrogen Sulfide in Natural Gas 233

Koth, A. W. See Parry, V. F.

Kramer, W. H. LP-Gas From the Ground Up 213

Kramers, W. J. and McKee, J. H. The Drying of Coal 191

Krebs, R. W. Application of the Fluid Catalyst Technique to Catalytic Cracking and Hydrocarbon Synthesis 128

Kreutzer, A. C. Butane-Propane Legislation 23

Krieger, F. and White, W. B. A Simplified Method for Computing the Equilibrium Composition of Gaseous Systems 134

Kroll, A. E. See Mack, D. E.

Krsek, G. See Adkins, H.

Kruger, R. E. Use of Natural Gas To Increase Manufactured Gas Plant Capacity 110

Kuhn, E. M. See Pelipetz, M.

Kulik, N. See Kemler, E. N.

Kummer, J. T., Browning, L. C. and Emmett, P. H. Thermodynamic Calculations Concerning the Possible Participation of the Carbides of Iron as Intermediate in Fischer-Tropsch Synthesis 176

Kunreuther, F. See Trainer, R. P.

Kwauk, M. See Wilhelm, R. H.

L

Lacey, W. N. See Olds, R. H.

Laidler, K. J. and Glasstone, S. Rate, Order and Molecularity in Chemical Kinetics 178

Laitinen, H. A., Higuchi, T. and Czuha, M. Potentiometric Determination of Oxygen Using the Dropping Mercury Electrode 72

Lamb, F. P. High Btu Oil Gas Production 192

Lane, J. C. See Weil, B. H.

Lane, W. H. Lamp Method for Quantitative Determination of Total Sulfur 238

Lankford, J. D. and Guthrie, B. Oil Shale Processing 129

Lapple, C. E. See Boucher, D. F.
Larian, M. G. Clarification Needed for Distillation Terms 100
Latta, J. E. and Walker, S. W. Commercial Application of Hydrocarbon Synthesis in the United States 54
LaViolette, W. A. Large Volume Automatic Pressure Regulation 233
Layng, E. T. Synthesis of Hydrocarbons with Sulfur Containing Catalyst (patent) 198
Laulhere, B. M., Jr. Plastic Pipe Line Coating and Yard Processing 165
Ledley, R. E. See Lipkin, M. R.
Lee, E. S. New Process Control Instruments for Chemical Industry 117
Lee, J. A. Esso's Fluid Catalyst Modifies Fischer-Tropsch 33
Lee, J. H. See Daigle, E. C.
Lee, R. See Hagerbaumer, W. A.
Lee, T. See Sease, J. W.
Lees, A. Instruments of Gas Manufacture and Distribution 210
Legatski, T. W. Propane's Place in the Sun 225
Leidheiser, H., Jr. and Gwathmey, A. T. The Selective Decomposition of Carbon on the (111) Face of a Nickel Crystal in the Catalytic Decomposition of Carbon Monoxide 111
Lengel, J. H. See Bloom, E. G.
Lents, M. R. See Miller, M. G.
Leopold, C. S. The Mechanism of Heat Transfer Panel Cooling Heat Storage—II Solar Radiation 143
Lessing, R. The Rational Preparation of Coal 4
Letourneau, R. L. and Matteson, R. Measurement of Heat of Combustion of Volatile Hydrocarbons 177
Leva, M. and Grummer, M. Pressure Drop Through Packed Tubes. Part III. Prediction of Voids in Packed Tubes 18; Heat Transfer to Gases Through Packed Tubes 75;—and Weintraub, M. and Pollchik, M. Introduction to Fluidization 183; Fluidization of Solid Nonvesicular Particles 204;—Grummer, M., Weintraub, M. and Storch, H. H. A Study of Fluidization of an Iron Fischer-Tropsch Catalyst 215; See also Weintraub, M.
Levens, A. S. Nomography (book) 188
Lewis, B. and Von Elbe, G. Combustion 228; See also Blanc, W. V.
Lewis, H. C., Edwards, D. G., Goglia, M. J., Rice, R. I. and Smith, L. W. Atomization of Liquids in High Velocity Gas Streams 60
Lewis, J. B. Gasification of Oil in Horizontal Retorts 49
Li, Y. M. and Coull, J. The Prediction of Vapor-Liquid Equilibria for Ternary Mixtures From the Data of Binary Systems 242
Lichtmann, R. S. See Rushton, J. H.
Lichty, L. C. Thermodynamics (book) 222
Linnett, J. W. See Hoare, M. F.; See Sherratt, S.
Lipkin, M. R., Hoffecker, W. A., Martin, C. A., Ledley, R. E. Aromatics in Petroleum Fractions 69; See also Mills, I. W.
Liplavk, L. I. Rapid Method of Moisture Determination in Coals by High Frequency Currents 35
Lister, F. See Riesz, C. H.
Littman, B. See Steyermark, A.
Lockwood, W. H. Hydrocarbon Sulfonylation 161
Lof, G. O. G. and Hawley, R. W. Unsteady State Heat Transfer Between Air and Loose Solids 162
Long, M. V. See Wilson, J. G.
Lonngren, H. E. Flange Design Considerations 116, 206, 245
Lotz, P. L. The Role of Paint in Combating Corrosion in the Petroleum Industry 206
Louden, E. W. Lost Circulation or Lost Returns 196
Love, F. H. Plant for LPG and Natural Gasoline 172; New Unit in Gas Conservation Program 212
Lovell, W. G. See Frey, F. E.
Lowe, W. F. Fuel Supply 1
Lowry, H. H. and Rose, H. J. Some Observations on German Coal Research and Developments 29
Luce, W. A. Cast Nickel-Molybdenum and Nickel-Molybdenum-Chromium Alloys for Severe Corrosion Services 165
Ludmila, J. See Simek, B. G.
Lund, G. and Dodge, B. F. Frankl Regenerator Packings 163
Lund, R. J. See Case, S. L.
Luntz, D. M. See Bednars, C.; Noll, H. D.
Lurie, P. C. See Riesz, C. H.
Lutz, B. C. and Wood, J. H. A High Temperature Control Circuit 206
Lyons, E. J. Practical Mixer Technology 205
Lype, E. F. See Yellott, J. I.

M

Maccormac, M. Production of Peak Load Gas by the Partial Combustion of Oil 193, 211
Mache, H. Increased Ignition Power of Electric Sparks by Locally Changing the Composition of the Gas Mixture 168
Mack, D. E. and Kroll, A. E. Effect of Baffles on Agitator Power Consumption 103; Mack, D. E. and Uhl, V. W. Performance and Design of Agitators 17; Mass and Heat Transfer in Agitator Systems 17
Magat, M. See Prettre, M.
Maggs, F. A. P. The Adsorption-Swelling of Several Carbonaceous Solids 240
Mahony, L. H. See Rushton, J. H.
Mallov, S. See Orning, A. A.
Maloney, M. Maintenance of Industrial Fire Fighting Equipment 120
Manley, H. W. Benton Unit Cycling Plant 171
Mapstone, G. E. Some Modifications of the Lamp Method for the Determination of Sulfur in Petroleum Products 200;—and Beckman, P. Determination of Olefins in Cracked Gases 200
Mariner, T. See Simard, G. L.
Marschner, R. F. See Seelig, H. S.
Marsh, F. A. What's Ahead in Pipe? 107; More Pipe in Prospect But Demand Stays High 142
Marshak, V. L. Investigation of the Collection of Liquid Slag in an Experimental Furnace 5
Marshall, J. R. Gas Purification—Wet and Dry 211
Martin, C. C. See Lipkin, M. R.
Martin, J. A. and Tolbert, L. Directing Pipe Line Inspection and Maintenance. Part I 173
Martin, J. W. Proper Installation Principles 9
Martin, S. W. See Robison, H. E.
Martin, W. F. Detection and Repair of Casing Leaks 50
Massey, H. Appliance Men Work for Reforms 1
Matheson, G. L. Modification in Roller Analysis for the Determination of Particle-Size Distribution 14
Matteson, R. See Letourneau, R. L.
Mattocks, E. Using LP-Gas Safely in Industry 172; Use of Unfired Pressure Vessels in the LPG Industry—Part I, II, III 195; Part IV 213; A Summary 77
Maxted, E. B. Studies in the Detoxication of Catalyst Poisons. Part VI. Use of Revivable Filter-Column 240;—and Walker, A. G. Part VII. The Self Poisoning Effect in the Hydrogenation of Pyridine 240
McAteer, J. H. See Knox, W. T., Jr.
McCarthy, C. J., Jr. Four-Way Augmentation with LP-Gas 68
McCartney, E. R. Gas Purification and Dehydration Process (patent) 151
McCartney, J. T. See Anderson, R. B.; Naugle, B. W.

McCaslin, L. S., Jr. New Cycling Plant Permits Economical Development of Small Fields 171; Nation's Largest Voluntary Unit Formed on Texas Gulf Coast 197
McClatchey, H. E. Comparison of Systems for Controlling Gas-Fired Furnace Process Temperature 190
McCreight, D. O. Permeability Data on American Refractories 44
McCulloch, A. Some Recent Conceptions of Coal Structure 4
McCulloch, F. W. See Walton, W. W.
McCullough, G. W., Hackmuth, K. H. and Miller, A. J. Modern Process Methods to Improve LPG Recovery 68
McCullough, J. D. Heat Losses in Furnace Linings 27; —and Crane R. A. and Beckman, A. O. Determination of Carbon Monoxide in Air by Use of Red Mercuric Oxide 35; See also Beckman, A. O.
McGee, J. P. See Schmidt, L. D.
McIntire, O. R. and Kennedy, R. N. Styrofoam for Low Temperature Insulation 220
McKee, H. C., Herndon, K. and Withrow, J. R. Estimation of Thiophene in Gasoline 133
McKee, J. H. See Hilliard, A.; Kramers, W. J.
McKetta, J. J., Jr. and Katz, D. L. Methane-n-Butane-Water System in Two- and Three-Phase Regions 159
McKinney, C. M. and Blade, O. C. Analysis of Crude Oils from 283 Important Oil Fields in the U. S. 175
McKinnis, A. C. See Berg, C.
McRae, H. C. Fundamentals of Combustion 65
McReynolds, H. Bench-Scale Method for Determining Activity of Cracking Catalysts in Powdered Form 70
Mears, R. B. Mechanism of Cathodic Protection 22
Meiller, D. V. Natural Gas Storage in Underground Pipe Sections 197; Underground Storage of Gas 214
Meissner, H. P. and Greenfeld, S. H. Composition and Boiling Points of Binary Azeotropes 96
Meites, L. and Meites, T. Removal of Oxygen from Gas Streams 238
Meites, T. See Meites, L.
Mellen, G. L. New Techniques in the Measurement of Pressures Below 10 mm 164
Melpolder, F. W. See Brown, R. A.
Menzie, D. E. Effect of Water Injection in Gas Drive 32
Meyers, C. H. Pressure-Volume-Temperature Data for Oxygen 201
Middlebrook, V. E. Some High Points in Gasoline Plant Design 51; Some High Points in Cycling Plant Design 52
Millen, J. A. See Chabre, G.
Miller, A. J. See McCullough, G. W.
Miller, B. Gas Transportation System Calculations. Part II—XVII, XVIII 9; Part III—XIX 32; XXI 53; XXII, XXIII 69; XXV 110; XXVI 127; XXVIII, XXX 174; XXXII 197; XXXIV 214; Part IV—XXXV 234; XXXVI 235
Miller, D. J. Denver Distribution Design for House-heating Load 150
Miller, E. B., Jr. A Survey of Dual Completions 8
Miller, M. G. and Lents, M. R. Practical Aspects of Cycling 67
Miller, R. Gas Oil Gasification in Horizontal Retorts 4, 49
Mills, I. W., Jurtz, S. S., Jr., Heyn, A. H. A. and Lipkin, M. R. Determination of Total Aromatic Plus Olefin 131
Milsom, D. The Mass Spectrometer and Control Laboratory 14
Minchin, L. T. Current Problems in Burner Design and Flame Behavior 24, 64; Field Tests for the Detection of Carbon Monoxide 199
Mironov, A. See Poido, A.
Mirrors, I. P. E. Projected Natural-Gas Processing Units Rated at Billion Foot Daily Capacity 121
Mitchell, R. F. See Wright, C. C.
Mohler, F. L. See Bloom, E. G.
Mohun, W. A. and Peterson, W. S. Precision of Heat Transfer Measurements with Thermocouples-Geometric Errors 18
Mong, P. E. Friction Factor Charts 173
Montgomery, C. W. and Weinberger, E. B. Product Distribution in the Synthesis of Hydrocarbons from Carbon Monoxide and Hydrogen 158;—and Hoffman, D. S. Thermodynamics and Stoichiometry of Synthesis Gas Production 92
Montross, C. F. See Scheibel, E. G.
Montroy, S. F. and Trotter, G. P. Steam Demand of Direct Acting Reciprocating Pumps 245
Moore, J. H. and Adams, J. W. Short Interval Acid Treating Technique 194
Mooy, H. H. See Klinkenberg, A.
Morehouse, H. P. A Low Cost Solution for Heating Basementless Houses 208
Morgan, F., Reed, D. W. and Gray, L. L. Meter for Measuring Distribution of Gas Flow in Well Bases 21
Morpurgo, P. W. R. and Silver, R. S. The Measurement of Radiation from Gas Fires 25
Morrison, J. R. See Avery, W. H.
Morton, B. B. Metallurgical Methods for Combating Corrosion and Abrasion in the Petroleum Industry 105
Mueller, A. V. Cooling Water Requirements for Natural Gas Booster Stations 29, 66, 125, 150
Mullens, N. B. See Eilerts, C. K.
Muller-Hillebrand, D. The Ignition of Explosive Gas Mixtures by Low Voltage Sparks 97
Mullikin, H. F. Determining Furnace Heat Transfer by Gas Temperature Measurement 168
Mullins, P. V. Helium Production Progress 172
Munch, R. H. Instrumentation 199
Munger, C. C. Corrosion Control in Mid Continent Production 44
Munzinger, O. A. F. A Comparison of Gas and Steam Turbines 209
Murdock, R. E., Brooks, F. R. and Zahn, V. Determination of Gaseous Hydrocarbons 72
Murphree, E. V., Gohr, E. J., Kaulakis, A. F. The Fluid Solids Technique: Application in the Petroleum Industry 12; Applications of the Fluid Solids Technique to Producing Synthetic Liquid Fuels 89
Musgrave, J. L. Radiant Heat 208
Myers, G. D. See Kelso, G.

N

Naldrett, S. N. See Boomer, E. H.
Nash, L. K. Microeffusiometry 94
Naugle, B. W., Davis, J. D., McCartney, J. T. and Wilson, J. E. Measurement of Coking Pressure in a Small Laboratory Oven 146
Needham, L. W. and Hill, H. W. The Settling of Mineral Particles in Water 39
Neff, M. See Orning, A. A.
Nelsen, F. M., Brooks, F. R. and Zahn, V. Nomographs for Distillation of Low Boiling Hydrocarbons 17
Nelson, A. C. Control of External Corrosion on Plantation Pipe Line 77
Nelson, W. L. and Harvey, R. J. A Correlation of A.S.-T.M., True Boiling Point and Flash Vaporization Curves 127
Newby, M. P. See Collins, R. D.

Newman, L. L. Oxygen in the Production of Hydrogen or Synthesis Gas 91; Report of Subcommittee on Use of Oxygen in Gas Manufacture 148
Nicholson, J. T. Recent Developments in the Use of Corrosion Inhibitors 62
Nicklin, T. The Treatment of Gasworks Effluent 86
Nicolai, A. L. Method and Apparatus for Measuring Constituents of Gases (patent) 217
Niemann, C. See Sease, J. W.
Noll, H. D. and Luntz, D. M. TCC Processing of Pennsylvania Oil Fractions 34, 55
Nolte, C. B. Give the Control Valve a Chance! 42
Normand, C. E. Design of High Vacuum Systems 114
Norris, W. E. and Clegg, F. R. Investigation of a Girbotol Unit Charging Cracked Refining Gases Containing Organic Acids 12
Nugent, F. J. Gas Has Got It—Going and Coming 108
Nuneviller, E. D. and Considine, D. M. Maintenance of Orifice Meters 117

O

Oberfell, G. G. See Brown, G. G.
O'Brien, V. J. See Drickamer, H. G.
Ockert, C. E. See Drickamer, H. G.
O'Connor, B. Silica Gel Percolation 236
Ode, W. H. See Selvig, W. A.
Odell, W. W. Gasification of Solid Fuels in Germany by the Lurgi, Winkler and Leuna Slagging-Type Gas-Producer Processes 5
Offutt, W. C., Fogle, M. C. and Beuther, H. Utilization of Refinery Gases by the Polyform Process 235
Oglesby, S., Jr. and Kemler, E. N. Possibilities of Energy Storage in Heat Pump Applications 20; See also Pease, W. C.
Ohlsson, O. The Moisture Content of Coal and its Determination 199
Oldright, G. L. Zinc Smelting in the Horizontal Retort Fired with Natural Gas 228
Olds, R. H. See Sage, B. H.
Oliver, G. D., Eaton, M., Huffman, H. M. Heat Capacity, Heat of Fusion and Entropy of Benzene 135
Orchin, M., Reggel, L., Friedel, R. A. and Woolfolk, E. O. Aromatic Cyclodehydrogenation 181; Orchin, M. and Storch, H. H. Solvation and Hydrogenation of Coal 210; See also Wender, I.
Orning, A. A., Mallov, S. and Neff, N. Reactivity of Solid Fuel to Air and Oxygen 85
Osborne, N. S. and Ginnings, D. C. Measurements of Heat of Vaporization and Heat Capacity of a Number of Hydrocarbons 37
Othmer, D. F., Josefowitz, S. and Schmutzler, A. F. Correlating Surface Tensions of Liquids 133, 135, 159; See also Kirk, R. E.
Ottenweller, J. H. See Rescorla, A. R.
Otvos, J. W., Stevenson, D. P., Wagner, C. D. and Beeck, O. Isomerization of n-Butane-1-C^{13} 181; See also Beeck, O.; Stevenson, D. P.

P

Parent, J. D. The Storage of Natural Gas as Hydrate 88;—and Katz, S. Carbon, Oxygen and Steam Reactions Studied 37
Parker, F. D. See Berg, C.
Parker, M. E. The Why, How and What of Pipe Line Corrosion 139
Parks, E. K. Pressure Maintenance and Cycling Plants . . . Increase Recovery 53; Production and Disposition of Natural Gas by California Producers 110
Parr, R. G. See Crawford, B. L., Jr.
Parry, V. F. Resume of Bureau of Mines Research and Development Work on Western Coals 149;—and Wagner, E. O., Koth, A. W. and Goodman, J. B. Gasification of Subbituminous Coal and Lignite in Externally Heated Retorts 93
Parten, L. W. Automatic Controls in Gas Operations 212
Partington, H. Central Heating 168
Patrick, E. A. K. An Electrostatic Method for Determining Dust in Wet Gases 20
Paquette, R. B. Review of Reforming of Hydrocarbons in Water Gas Sets. Part II—Reforming of Natural Gas 149
Patterson, O. L. See Young, E. T.
Pease, R. N. See Ranford, C.
Pease, W. C., Oglesby, S., Jr. and Freberg, C. R. Process on Heat Transfer. Tests of a Buried Copper Pipe 65
Peavy, C. D. See Kelso, G.
Peebles, W. C. See Hofer, L. J. E.
Peifer, N. P. Cathodic Protection of Underground Structures 77;—and Costanzo, F. E. Recent Developments in Cathodic Protection of Pipe Lines 196; Measurement of Galvanic Currents Around an Underground Structure 206
Pelipetz, M., Kuhn, E. M., Friedman, S. and Storch, H. H. Effect of Catalysts on the Hydrogenolysis of Coal 158
Pennington, J. V. Research Activity Reaches New High on Gulf Coast 166
Pepkowitz, L. P. Volumetric Determination of Microgram Quantities of Acid-Soluble Sulfur 239
Perry, G. T. Fuels and Lubricants from Sources Other Than Petroleum 176
Peterson, W. S. See Mohun, W. A.
Pettingell, W. Extraction of Benzole and Sulphur Compounds 6
Pettyjohn, E. S. Extension of Gas Service 23;—and Christiansen, E. B. Effect of Particle Shape on Free Settling Rates of Isometric Particles 58
Pexton, S., Dougill, G. and Ravald, L. A. Removal of Tar, Naphthalene and Ammonia from Gas 147; 192
Philbrick, G. A. and Kidd, W. H. Principles of Automatic Control 219
Pigford, M. A. See Brinn, M. S.
Pitzer, K. S. See Beckett, C. W.; Kilpatrick, J. E.
Plyler, E. K. Prism Spectrometry from 24 to 37 Microns 38;—and Humphreys, C. J. Infrared Emission Spectra of Flames 202
Poettmann, F. H. and Rice, R. B. Nomographs for Vapor-Liquid Equilibrium Calculations 76
Poido, A. and Mironov, A. Use of Natural Gas for Locomotives 3
Pollchik, M. See Leva, M.
Poole, M. E. 10,000 Miles of Pipe Line Construction Probable in 1948 46
Portwood, H. D. Discovery and Control of Leakage 8, 28
Potas, A. E. See Eastwood, S. C.
Potter, L. T. Operating Problems of the Independent Gas Producer 152
Pound, W. T. The Price of Natural Gas as a Conservation Factor 227
Powell, A. R. Symposium on Production of Synthesis Gas 90
Prettre, M. and Magat, M. A Kinetic Theory for Air Producer Gas Formation 38
Prien, C. H. Pyrolysis of Coal and Shale 211
Pryor, C. C. Clear Lake Plant Designed for Propane-Gasoline Product 31; Compressor Building for Gasoline Plant 126; Increased Economy at Tomoconnor 194
Pyke, H. G. The Influence of Ammonia and Hydrocyanic Acid on the Corrosion of Steel by Town Gas 28

Q

Quarendon, R. Infra-Red Absorption Analysis of Gases and Vapors—6. Additional Apparatus 13

Quiram, E. R. See Wear, G. E. C.

R

Raber, B. F. and Hutchinson, F. W. Graphical Determination of Heat Transfer Film Coefficient for Air 101;—Boester, C. F. and Hutchinson, F. W. The Heat Pump 76

Radford, D. E. The Preparation and Use of Pelleted Ferric Oxide for Gas Purification 84

Rae, D. S. See Adkins, H.

Ragatz, E. G. Straight-Line Chart Determination of Absorber Extraction Efficiency 57

Ralston, O. C. See Fraas, F.

Rama Das Guha, S. See Ghosh, J. C.

Randall, R. B. See Horton, L.

Ranford, C. and Pease, R. N. Theory of Burning Velocity. II. The Square Root Law for Burning Velocity 36

Ransome, R. H. Competition—Or Cooperation? 225

Rasmussen, R. S. Vibrational Frequency Assignments for Paraffin Hydrocarbons: Infra-Red Absorption Spectra of The Butanes and Pentanes 202

Ravald, L. A. See Pexton, S.

Raw, R. Control of Fractional Distillation by Means of Refractive Index Measurements 100

Ray, P. A. Velocity Reducing Hood Orifices 190

Redmond, J. C. Quantitative Analysis with the X-ray Spectrometer 15

Reed, D. W. See Morgan, F.

Reed, H. W. An "Outsider" Looks to Natural Gas 127; Gas Industry Forges Ahead 23; Facing Facts in the Gas Industry 224

Reed, P. Texas Eastern Operated First High-Pressure Gas-Transmission Centrifugal Compressors 30; 23,707 Miles of New Line, Foreign and Domestic Seen for 1948-51 Period 46; Today's Natural Gas Construction Methods in Laying 26 and 30-31-In. Pipe Lines 196

Reed, R. M. and Eriksen, A. Hydrogen and Synthesis Gas Production 193, 232

Reeves, A. A. Continuous Collector Samples Gases in Proportion to Main Line Flow 234

Reggel, L. See Orchin, M.

Reid, W. T. Low Temperature Carbonization of Coal in Japan 85

Reitmeier, R. E., Atwood, K., Bennett, H. A., Jr. and Baugh, H. M. Production of Synthesis Gas by Reacting Light Hydrocarbons with Steam and Carbon Dioxide 92

Rescorla, A. R., Ottenweller, J. H. and Freeman, R. S. Evaluation of Catalysts for Catalytic Cracking 89; See also Scheumann, W. W.

Revell, G. L. and Herbruck, C. G. Automatic Welding Speeds Pipe Line Work 173

Reynolds, D. A. See Brewer, R. E.

Reynolds, J. G. and Irwin, M. The Determination of Formaldehyde and Other Aldehydes 176

Reynolds, P. M. Effect of Temperature and Pressure on Specific Gravity 71

Rice, R. B. See Poettmann, F. H.

Rice, R. I. See Lewis, H. C.

Riddle, H. S. and Harris, H. S. A Method of Electrically Bonding High Resistance Pipe Couplings Without Excavation 170

Riesenfeld, F. C. See Blohm, C. L.

Riesz, C. H., Batchelder, H. R. and Lurie, P. C. Catalytic Reforming of Hydrocarbons 48; Riesz, C. H., Lister, F., Smith, L. G. and Komarewsky, V. I. Catalysts for Hydrocarbon Synthesis 89; Riesz, C. H., Lurie, P. C. and First, J. J. Catalytic Reforming of Hydrocarbons 109

Riley, R. See Weaver, E. R.

Risser, R. R. The Use of Natural Gas in the Kiln Drying of Lumber 66

Ritter, H. L. and Erich, L. C. Pore Size Distribution in Porous Materials 179

Roberts, E. J. See Kite, R. P.

Roberts, J. Carbonizing Coal and Breeze Blends 3

Roberts, R. H. and Johnsen, S. E. J. Mass Spectra of Some Organic Compounds 202

Roberts, W. W., Jr. See Zeiger, H. E.

Robertshaw, J. A. Manufacturers Faced with Unprecedented Demand for Appliances 24

Robertson, W. T. and Stamper, H. M. Katy Gas-Cycling Plant 194

Robey, R. F. and Wiese, H. K. Chemical Analysis of Refinery C_5 Hydrocarbon Fractions 237

Robinson, H. C. See Deitz, V. R.

Robison, H. E. and Martin, S. W. Beaker-Type Centrifugal Sedimentation of Subsieve Solid-Liquid Dispersions—I 113

Rockwell, R. A. See Batchelder, C. D.

Roose, R. W. See Konzo, S.

Rose, H. E. and French, C. C. J. On the Extinction-Coefficient: Particle Size Relationship for Fine Mineral Powders 241

Rose, H. J. Recent Engineering Developments in Switzerland on Gas Turbines and Steam Generators 81; Trends in Solid-Fuel Research 6; Availability of Coals for Gas Manufacture 146; See also Lowry, H. H.

Rossini, F. D. Pure Compounds from Petroleum 70; See also Forziati, A. F.; Kilpatrick, J. E.; Streiff, A. J.

Roy, A. N. See Ghosh, J. C.

Rubin, F. L. Shell and Tube Heat Exchangers 184

Rugh, K. W. See Thomas, R. W.

Rumford, F. Heat Transfer Through Boiling Liquid Films 59

Rushton, J. H., Lichtmann, R. S. and Mahony, L. H. Heat Transfer to Vertical Tubes in a Mixing Vessel 136; See also Bissell, E. S.

Ryder, H. M. Permeability Absolute, Effective, Measured 115

S

Sage, B. H., Olds, R. H. and Lacey, W. N. Two Gaseous Mixtures Containing Hydrogen and Nitrogen 180, 203

Saier, E. L. and Coggeshall, N. D. Infrared Analysis of Organic Mixtures 217

Salley, D. J. See Simard, G. L.

Samaras, D. G. Gas Dynamic Treatment of Exothermic and Endothermic Discontinuities 161

Sands, A. E., Wainwright, H. W. and Schmidt, L. D. Purification of Synthesis Gas Produced from Pulverized Coal 92

Sarjant, R. J. See Jackson, R.

Saunders, E. Nomograph for Particle Size Determination with the Sharples Supercentrifuge 132

Savage, R. H. and Brown, C. Chemical and Physical Adsorption of Gases on Carbon Dust 239

Scanlan, P. G. See Bainbridge, J. R.

Scheibel, E. G. Multi-Component Distillation Calculations 114; Nomograph for Equilibrium Flash Calculations 182; Fractional Liquid Extraction. Part I 205; Part II 244;—and Montross, C. F. Optimum Feed Tray in Multicomponent Distillation Calculations 182

Scheumann, W. W. and Rescorla, A. R. The Aromatic Adsorption Index as a Rapid Method for Approximating Catalyst Activity 70

Schlich, V. A. Potato Shippers Use LP-Gas 80
Schmerling, L. Aluminum Chloride Solutions in Nitroparaffins 243
Schmidt, E. The Design of Contra-Flow Heat Exchangers 103
Schmidt, L. D., McGee, J. P. and Slone, M. C. A Pilot Plant for Gasifying Powdered Coal Entrained in Oxygen and Steam 232; See also Sands, A. E.
Schmutzler, A. F. See Othmer, D. F.
Schroeder, W. C. Synthetic Liquid Fuels in the United States 34; Comparison of Major Processes for Synthetic Liquid Fuels 129
Schuftan, P. M. Modern Gaseous Oxygen Production Methods 137; A New Process for the Recovery of Ethylene from Coke Oven Gas 230
Scott, F. E. See Scott, G. S.
Scott, G. S., Jones, G. W. and Scott, F. E. Determination of Ignition Temperatures of Combustible Liquids and Gases 98
Scott, J. A. See Kimball, F. B.
Seagren, G. W. Organic Coatings for Corrosion Protection—A General Discussion 117
Sease, J. W., Lee, T., Holzman, G., Swift, E. H. and Niemann, C. Quantitative Methods for Certain Organic Sulfides 132
Sedlak, V. A. See Streiff, A. J.
Segeler, C. G. Combustion Principles and Equipment Selection in the Use of Gas for Heating Large Buildings 228
Seeley, D. Grade and Yield Estimation of Natural Gasoline 213
Seelig, H. S. and Marschner, R. F. Production of Synthesis Gas by Catalytic Decomposition of Methanol 91
Segeler, C. G. Boiler Efficiencies when Using Gas 47
Seligman, B. See Anderson, R. B.
Sellei, H. Rust Preventives—How They Work, What They Contain 63
Selvig, W. A. and Ode, W. H. An Investigation of a Laboratory Test for Determination on the Free-Swelling Index of Coal 84
Selwood, P. W. See Eischens, R. P.
Senatoroff, N. K. Fifteen Years Experience in Application of External Corrosion Mitigation Methods to a High Pressure Natural Gas Transmission Line 212
Serner, H. E. Application and Design of Mixing Equipment 205
Shackleton, L. R. B. The Fuel Research Station Emulsion Process for the Solidfication of Organic Liquids 154
Shaw, J. A. and Fisher, E. Determination of Acetylene in Gas 155
Sheen, R. T. Controlled Volume Chemical Pumps; Design and Operation 115
Sheppard, H. R., Jr. See Hinckley, J. A., Jr.
Sheppard, N. Some Characteristic Frequencies in the Raman Spectra of Saturated Aliphatic Hydrocarbons 202
Sherratt, S. and Linnett, J. W. The Determination of Flame Speeds in Gaseous Mixtures 217
Shippe, E. D. See Comings, E. W.
Shnidman, L. Gaseous Fuels (book) 118
Shock, D. A. Testing and Selection of Inhibitors for Corrosive High Pressure Condensate Wells 87; pH Determination in Condensate Well Water 171; See also Hackerman, N.
Short, E. New Gasoline Plant 8
Shreve, R. N. Alkylation 198
Siebert, C. A. See Sinnott, M. J.
Silver, R. S. See Morpurgo, P. W. R.
Silverman, L. See First, M. W.
Simard, G. L., Steger, J., Mariner, T., Salley, D. J. and Williams, V. Z. In Situ Study of the Thermal Decomposition of Ethylene Oxide by Infra-Red Spectrometry 202
Simek, B. G. and Ludmila, J. The Determination of Moisture in Solid Fuels 35
Simon, M. J. and Govinda, M. A. Method for Designing Packed Columns 75
Simpson, S. G. See Hamilton, L. F.
Sinnott, M. J. and Siebert, C. A. Heat Transfer in a Recirculating Furnace 163
Sips, R. On the Structure of a Catalyst Furnace 128
Skolnik, H. Correlation of Azeotropic Data 96
Slager, W. H. See Kniel, L.
Sloan, J. P. Laboratory Studies and Their Relation to Cycling Problems 87
Slone, M. C. See Schmidt, L. D.
Slonnegar, J. C. Desirable Characteristics of Pumping Units and Engines 216
Smith, A. Q. Gas Convection Heating Curves Automotive Finishes at Briggs, Manufacturing Co: II 189
Smith, B. Butane-Fueled Engines Power Electric Generating Plants 65
Smith, D. E. See Buchanan, B. B.
Smith, F. C. The Fifth Big Job is Asking to be Done 26
Smith, H. L. See Finnegan, T. J.
Smith, J. R. See Dinneen, G. U.
Smith, L. G. See Riesz, C. H.
Smith, L. W. See Lewis, H. C.
Smith, M. A. See Webb, G. M.
Smith, R. B. and Dresser, T. Distillation Calculations in Ideal and Non-Ideal Systems 244
Smith, R. H. Selection of High Temperature Materials for Gas Turbines 48
Smith, R. P. Equilibrium of Iron-Carbon-Silicon and of Iron-Carbon-Manganese Alloys with Mixtures of Methane and Hydrogen at 1000°C 208
Smith, W. H. See Walton, W. W.
Smith, W. M. See Voorhies, A., Jr.
Snuggs, J. F. Regeneration of Spent Catalyst in Fluid Catalytic Cracking 10
Soule, L. F. See Streiff, A. J.
Speers, J. A. Influence of Packing Density in Purifiers on Resistance to Gas Flow 41; See also Jones, S.
Spillane, L. J. and Goodwin, R. D. A Laboratory Apparatus for Vapor Phase Reactions 113
Spink, L. K. Accurate Wide Range Metering of Natural Gas with the Differential Type Meter 104
Spitzer, R. See Beckett, C. W.
Spolan, I. See Jones, G. W.
Sporn, P., Ambrose, E. R. and Baumeister, T. Heat Pumps (book) 119
Spring, H. M., Jr. Pressure Vessels for Industry 78
Stacey, G. W. Coal—Its Constitution and Utilization as a Chemical Raw Material 48
Stafford, R. W. See Barnes, R. B.
Stahly, E. E. See Whitlock, M. H.
Stamper, H. M. See Robertson, W. T.
Stanbery, L. J. and Brennan, J. M. Rapid Billet Heating with Gas 190
Stark, E. L. Instrumentation on El Paso Natural's Texas-California Line 214
Steger, J. See Simard, G. L.
Steiner, H. See Weizmann, C.
Steiner, W. A. See Brewer, R. E.
Stephens, D. K. Interior Cleaning for Maximum Flow Efficiency in Natural Gas Lines 171; Replacing Valves on Drips and Take-Offs Without Interrupting Service 104; Electric Arc Welding Against Pressure 117
Stephens, J. P. Equipment and Processes for Manufacturing Higher Btu Gases 123, 147
Sterba, M. J. See Haensel, V.
Stevenson, D. P., Wagner, C. D., Beeck, O. and Otvos, J. W. Isotope Effect in the Thermal Cracking of Propane I-C^{13} 216; See also Beeck, O.; Otvos, J. N.
Steyermark, A., Bass, E. and Littman, B. Microdetermination of Sulfur in Organic Compounds 156; See also Furter, M. F.
Stone, J. F. See Bradley, C. B.
Storch, H. H. Review of Development of Processes for Synthesis of Liquid Fuels by Hydrogenation of

Carbon Monoxide 129; See also Clark, E. L.; Leva, M.; Orchin, M.; Pelipetz, M.
Stovall, E. E. High Pressure Gas Measurement 197
Stow, F. S., Jr. and Elliott, J. H. Adiabatic Calorimeter 93
Stratman, E. A. Butane-Propane Carburetion 169
Streeter, V. L. Fluid Flow and Heat Transfer in Artificially Roughened Pipes Studied 75
Streiff, A. J., Zimmerman, J. C., Soule, L. F., Butt, M. T., Sedlak, V. A., Willingham, C. B. and Rossini, F. D. Purification, Purity, and Freezing Points of 30 Hydrocarbons of the API-Standard and API-NBS Series 243
Strickland-Constable, R. F. The Interaction of Carbon Filaments at High Temperatures with Nitrous Oxide, Carbon Dioxide and Water Vapour 135
Squires, F. Water-Flooding Opportunities Explored by Gas Injection 126
Stuart, A. H. The Corrosion of Buried or Submerged Pipes 246
Sullivan, F. W., Jr. Fuel Synthesis By-Products as a Source of Chemicals 32
Sullivan, W. F. See Jacobsen, A. E.
Sulzbacher, M. See Weizmann, C.
Swallow, H. T. S. See Feachem, G.
Sweeney, E. L. Load Forecasting 68
Swift, E. H. See Sease, J. W.
Synder, J. A. See Kelso, E. A.

T

Tarpley, E. C. See Cooper, H. M.
Taylor, H. F. Determination of Hydrocyanic Acid in Crude or in Refined Coal Gas 13
Taylor, H. S. See Black, C.; Kemball, C.
Taylor, J. F. See Comings, E. W.
Taylor, N. E. See Grant, N. J.
Taylor, R. C., Brown, R. A., Young, W. S. and Headington, C. E. The Mass Spectrometer in Organic Chemical Analysis 130; See also Brown, R. A.
Tebboth, J. A. The Decomposition of Carbon Monoxide by Nickel Catalysts. The Reaction Between 250° and 450° 158
Terry, L. F. Fuels of the Future 79
Thacher, F. B. See Cory, M. T.
Thoes, D. Transfer of LP-Gases 195
Thomas, G. D. See Bremmer, J. G. M.
Thomas, H. H. Continuous Determination of Small Concentrations of Hydrogen Sulphide in Town Gas 72
Thomas, L. H. A Relationship Between Viscosity, Density, and Vapor Pressure of Liquids 15
Thomas, R. W. and Rugh, K. W. LP-Gas Sales Gain 30% 23
Thompson, A. J. Temperature Distribution in Furnace Walls of Varying Thermal Properties 65
Thompson, E. O. Texas Natural Gas—Reservoirs and Yearly Production from 1939-1947. Its Fields, Recoverable Reserves and New Transmission Lines 107
Thompson, H. L. See Bridges, G. L.
Thompson, H. W. The Correlation of Vibrational Absorption Spectra with Molecular Studies 159
Thorndike, A. M. The Experimental Determination of the Intensities of Infrared Absorption Bands. III. Carbon Dioxide, Methane and Ethane 38
Thornton, D. P., Jr. Gasoline from Natural Gas Will Cost 9.14¢ Per Gal, WPRA Meeting Told 89; Polarographic Determination of Naphthalenes in Kerosine and Light Gas Oils 177; Air Cooled Heat Exchangers 43; See also Goddin, C. S.
Thornton, V. and Herald, A. E. Infra-Red Analytical Techniques for Analyzing C_5 Mixtures 94
Titus, E. Dual-Purpose Propane Plant 31; Integrating Crackers into Gas Supply Systems 170
Tolbert, L. See Martin, J. A.
Tomes, J. A. Town Gas in the Handblown Domestic Glass Industry 227
Tomkins, S. S. Boiler Water Conditioning and Chemical Cleaning of Boiler 137
Tomlinson, R. H. and Flood, E. A. The Flow of Gases and Vapors Through Adsorbing Porous Media 75
Torrey, P. D. Design and Construction of Compressor Plants 30
Townend, D. T. A. Combustion 26
Townend, F. S. See Finlayson, T. C.
Trainer, R. P., Alexander, N. W. and Kunreuther, F. Fluid Bed Catalytic Cracking Plant 53
Trotter, G. P. See Montroy, S. F.
Tucker, S. A. How Gas Turbines Fit into Future Power Patterns 209
Tuttle, R. B. Construction Under Way Will Increase Output of Natural-Gasoline Cycling Plants 79; New Midget Gasoline Plant . . . for Smaller Leases . . . And Lower Volumes 88; N.C.R.A. Catalytic Desulfurization Reforming Unit Operates on Variety of Charging Stocks 175; Natural Gas Processing Units on Upgrade, with 107 Projects in Active Status 225
Twigg, G. H. See Wood, A. M.
Tyson, J. D. See Wilder, A. B.

U

Uhl, V. W. See Mack, D. E.
Uhlig, H. H. Corrosion Handbook (book) 187
Ulmer, R. C. and Churchill, J. F. pH Control Through the Use of a Sulfur Burner 215, 235
Underwood, A. J. V. Fractional Distillation of Multicomponent Mixtures 182
Ungnade, H. E. and Zilch, K. Electric Furnace for Semimicroanalysis of Carbon and Hydrogen 237

V

Vanderweil, R. B. Practical Pointers on Radiant Heating Design 65
Van Dyke, B. H. New Commercial Tonnage Oxygen System 192; Elliott Oxygen System: How It Works . . . Description of Cycle 212; Oxygen by Atmospheric Pressure Distillation 232
Van Gilder, R. D. See Brewer, R. E.
Van Krevelen, D. W. and Hoftijzer, P. J. Kinetics of Simultaneous Absorption and Chemical Reaction 178
Van Winkle, M. Thermal Properties of Petroleum Oils. Part I. Mean Specific Heats of Petroleum Liquids and Vapors 180; Part II. Enthalpies of Saturated and Super Heated Petroleum Vapors at Atmospheric Pressure 180; Part III. Effect of Pressure on Enthalpy of Petroleum Vapor 242
Viallard, R. Ignition of Explosive Gas Mixtures by Electric Sparks, Minimum Ignition Energies 159
Villines, E. S. Selective Acidizing at Hugoton 194
Vogt, E. G. and White, R. R. Friction in the Flow of Suspensions 204
Von Elbe, G. and Grumer, J. Air Entrainment in Gas Burners 143; See also Blanc, W. V.; Lewis, B.
Voorhies, A., Jr., Smith, W. M. and Hemminger, C. E. Hydrogenation of Catalytically Cracked Naphthas for Production of Aviation Gasolines 9

W

Wagner, C. D. See Beeck, O.; Otvos, J. N.; Stevenson, D. P.
Wagner, E. O. See Parry, V. F.
Wainwright, H. W. See Sands, A. E.
Walker, A. G. See Maxted, E. B.
Walker, R. Application of Mechanical Producers to Retort House Practice 147
Walker, S. W. See Latta, J. E.
Wall, F. T. Theory of Vapor Pressures of Liquids Based on Van Der Waals' Equation of State 160
Wall, L. A. Mass Spectrometric Investigation of the Thermal Decomposition of Polymers 242

Walsh, A. D. Processes in the Oxidation of Hydrocarbon Fuels—Part II, Part III 74
Walton, W. H. Feret's Statistical Diameter as a Measure of Particle Size 200
Walton, W. W., McCullough, F. W. and Smith, W. H. Determination of Small Amounts of Oxygen in Organic Compounds 177
Ward, S. G. Coal—Constitution and Utilization 4; Part II—Methods of Utilizing and Processing Coal 145
Wardner, W. C. Increasing Gas Production from Coke Oven Plants 122; Higher Gas Production from Coke Oven Plants 122
Warren, H. L. Report of Performance of a Domestic Kitchen Ventilation Hood 80
Watson, J. H. L. Particle Size Determinations with Electron Microscopes 156
Wear, G. E. C. and Quiram, E. R. Modified Burners for Elemental Analysis by Lamp Combustion and Their Application to Special Problems 237
Weaver, E. R. and Riley, R. Measurement of Water in Gases by Electrical Conduction in a Film of Hygroscopic Material and the Use of Pressure Changes in Calibration 95, 133
Webb, G. M., Smith, M. A. and Ehrhardt, C. H. Chemical and Physical Properties of Alumina-Molybdenum Oxide Catalysts for Hydroforming 10
Webber, H. M. and Hotchkiss, A. G. Furnace Atmospheres for Sintering, Part IV: Gas Analyzers 2
Weber, G. Compression, Dehydration Plant Provides Full Gas Utilization 150; Huge Gas-Conservation Project Now in Initial Operation Stage 150; New Gulf Oil Plant in West Texas Combines Gas Lift and Repressuring 8
Weeks, R. L. See Knox, W. T., Jr.
Weil, B. H. and Lane, J. C. Synthetic Petroleum from the Synthine Process (book) 188
Weinberger, C. B. See Montgomery, C. W.
Weintraub, M. and Leva, M. Pressure Drop in Packed Tubes 219; See also Leva, M.
Weitzel, H. R. Combination Scrubbing, Dehydration, Desulfurization Plant 234
Weizmann, C., Bergmann, E., Steiner, H. and Sulzbacher, M. Production of Aromatic Hydrocarbons from Petroleum 215
Welch, F. X. Will Synthetics Replace Natural Fuels? 225
Weller, S. Kinetics of Carbiding and Hydrocarbon Synthesis with Cobalt Fischer-Tropsch Catalysts 10;—and Hofer, L. J. E. and Anderson, R. B. The Role of Bulk Cobalt Carbide in the Fischer-Tropsch Synthesis 70
Wender, I. and Orchin, M. Critical Review of Chemistry of Oxo Synthesis for Production of Alcohols from Olefins, Carbon Monoxide, and Hydrogen 160
Wenner, R. R. and Dybdal, E. C. Catalytic Dehydrogenation of Ethylbenzene 99
Werner, H. G. See Kilpatrick, J. E.
West, J. R. Thermodynamic Properties of Hydrogen Sulfide 134
White, J. F. Low Temperature Insulation 206
White, R. R. Calculation of Plate Columns for Ternary Distillation 60;—and Boyd, W. T. Stripping and Rectifying Columns for Ternary Distillation 19; See also Akers, W. W.; Vogt, E. G.
White, W. B. See Krieger, F.
Whitehouse, A. M. See Clark, E. L.
Whitehurst, B. W. High Vacuum and Its Process Applications 21
Whitelaw, H. L. What's New in Steel 226
Whitlock, M. H., Haddad, G. J. and Stahly, E. E. System for Rapid Evaluation of Catalysts for Production of Butadiene from Ethanol 15
Whittingham, G. The Oxidation of Sulphur Dioxide in Slow Combustion Processes 179
Wiener, H. Correlation of Heats of Isomerization and Differences in Heats of Vaporization of Isomers Among the Paraffin Hydrocarbons 38; Vapor Pressure-Temperature Relationships Among the Branched Paraffin Hydrocarbons 57
Wiese, H. K. See Robey, R. F.
Wilder, A. B. and Tyson, J. D. Metallurgical Properties of High Yield Strength Seamless Line Pipe 63, 105
Wiley, J. T., Deloney, J. E. and Denton, S. W. Accurate Particle-Size Determination of Fluid Catalysts by Coordination of Roller Analysis and Microscopic Examination 36
Wilhelm, R. H. and Kwauk, M. Fluidization of Solid Particles 100
Williams, C. R. Liquids from Natural Gas 64
Williams, V. Z. See Barnes, R. B.; Simard, G. L.
Williams-Leir, G. See Burgoyne, J. H.
Willien, L. J. Oil Seal in Low Pressure Holders 214
Willingham, C. B. See Streiff, A. J.
Wilson, H. B. Gas Sales Potentials in Launderettes 25
Wilson, J. E. See Naugle, B. W.
Wilson, J. G., Karr, H. M. and Long, M. V. Instrumentation as Applied to Speed Control 103
Winding, C. C. and Cheney, A. J., Jr. Mass and Heat Transfer in Tube Banks 183
Wise, C. E. See Bloom, E. G.
Withrow, J. R. See McKee, H. C.
Wood, A. M., Crank, J. and Twigg, G. H. The Application of the Differential Analyzer to a Problem in Chemical Kinetics 179
Wood, J. H. See Lutz, B. C.
Woodall, J. D. C. Material Handling on a Provincial Gas-Works 85
Woolfolk, E. O. See Orchin, M.
Woolley, H. W. Thermodynamic Functions for Molecular Oxygen in the Ideal Gas State 98
Workman, R. Use of Radiant Tubes in the Infra-Red Process 82
Wright, C. C., Barclay, K. M. and Mitchell, R. F. Production of Hydrogen and Synthesis Gas 92
Wright, S. R., Dimock, W. R. and Davis, S. G. Evaluation of Catalysts Used in the Synthesis of Hydrocarbons 53

Y

Yellott, J. I. The Gas Turbine Power Plant—VI 2; Part VII 3; Part VIII 144;—and Lype, E. F. Some Effects of Pressure Loss on the Open-Cycle Gas-Turbine Power Plant 3
Young, C. C. Gas-Oil Burner Offers Peak Stand-by Protection for Homes 166; Gas-Oil Burner Provides New Protection for Homes that are Heated with Gas 190
Young, D. S. The Automatic Remote Control of Low Pressure Systems 172; Automatic Controls in Gas Distribution 191
Young, E. T. and Patterson, O. L. Flow Meter for Measuring Input to Water-Injection Wells 20
Young, W. S. See Brown, R. A.; Taylor, R. C.
Yu, K. T. and Coull, J. Application of Zygograph to Distillation of Binary Mixtures 218
Yuster, S. T. Water-Flood Spacing 31

Z

Zahn, V. See Murdock, R. E.; Nelsen, F. M.
Zahnstecher, L. W. See Kehde, H.
Zeiger, H. E. and Roberts, W. W., Jr. Sendout Gas Nomograph 193
Zilch, K. See Ungnade, H. E.
Zimmerman, J. C. See Streiff, A. J.
Zobel, O. H. See Ingersoll, L. R.

SUBJECT INDEX

A

ABSORPTION
absorber extraction efficiency 57
calculations 18, 101, 102, 114, 161, 181, 182, 218
for ethylene purification 17
kinetics 178
process design methods 59

ACETYLENE 160
explosibility 37
from methane 75

ADSORPTION 243
gases on carbon dust 239
preparation of saturated hydrocarbons 40

AIR CONDITIONING 26, 76, 80

ALKYLATION
of aromatic hydrocarbons 243
review 198

ALUMINA, effect of steam on transitions 36

AMERICAN GAS ASSOCIATION, research program 207

AMMONIA 50

ANALYSIS
acetylene in gas 155
alkylbenzenes 57
aromatic compounds 199
aromatic and olefins in hydrocarbon mixtures 131
aromatics in petroleum fractions 69
bibliography of crude oil analyses 175
binary gas mixtures 155
bulk density determination 94
burners 237
calorimeter 93, 131
carbon determination 94, 237
carbon dioxide in industrial water 19
carbon in bituminous coal 55
carbon monoxide 155, 199
carbon monoxide by absorption 13
carbon monoxide in air 35, 176
coal hydrogenation products 229, 236
coal oxidation products 229
crude oil 175
crude petroleum C_6 fraction 57
determination of acid-soluble sulfur 239
determination of composition of gas 155
determination of dust in wet gases 20
determination of gaseous hydrocarbons 72
determination of iso-butene in binary mixtures 131
determination of olefins in cracked gases 200
determination of olefins by infrared spectroscopy 217
determination of olefins in gasoline 217
determination of organic sulfur in producer gas 156
determination of sulfur by lamp method 200, 238
determination of sulfur in benzole 15
determination of sulfur in fuel oil 56
determination of sulfur in gasoline 215
determination of sulfur in hydrocarbons 238
determining surface area by means of low-temperature isotherms 56
dew point 199
electron microscope 156, 201, 240
emission spectra of CO_2 and H_2O in flames 202
equipment 2, 13, 19, 20, 35, 94, 113, 132, 133, 155, 177, 199, 217, 237, 239
extinction coefficient 241
flow calorimeter 36
furnace atmosphere 2, 201
formaldehyde 176
free radical detection by mass spectrometer 112
gas analyzer 217
gas mixtures 237
gases 217
halogen determination 237
heat of combustion measurement 177
hydrocarbon C_5 fractions 94, 237
hydrocarbon mixtures 72, 131, 217
hydrocarbon vapors in gaseous mixtures 35
hydrocarbons 70
hydrocyanic acid in coal gas 13
hydrogen determination 94, 237
hydrogen in bituminous coal 94
hydrogen sulfide in natural gas 233
hydrogen sulfide in town gas 72
infra-red absorption analysis 13
infra-red absorption spectra of paraffin hydrocarbons 202
infra-red analysis of gaseous hydrocarbon mixtures 217
infra-red spectra of hydrocarbons 17
light hydrocarbon mixtures 14
mass spectra of organic compounds 201, 202
mass spectrometer 14
microdetermination of carbon and hydrogen 94
microdetermination of carbon monoxide 176
microdetermination of sulfur in organic compounds 73, 156
moisture in brown coal by distillation 156
moisture in coal 21, 35, 177, 199
molecular weight determination 94
naphthalenes in kerosene or light gas oil 177
natural gas 132
nitrogen determination 238
olefin and aromatic content of hydrocarbon mixtures 131
olefin and aromatics determination 73
organic analysis by infra-red spectrometry 132
organic mixtures by infrared analysis 217
organic mixtures by mass spectrometer 130
organic sulfide determination 132
organic sulfur in town gas 5, 94
oxygen determination 72, 155
oxygen in flue gases 217
oxygen in gases 238
oxygen in organic compounds 177
oxygen removal from gas streams 238
particle sedimentation velocities 58
particle size determination 36, 132, 156
particle size distribution 14, 113
particle size measurement 73, 200
particle size relationship 241
pressure regulator 94
Raman spectra of saturated aliphatic hydrocarbons 202
settling of particles 39
shale oil naphtha 55
specific dispersion of saturated hydrocarbons 73
specific heat determination 131
specific heat measurement 36
spectroscopy 38, 132, 202
spectrum of carbon monoxide-oxygen reaction 202
sulfur 237
surface area determination 56
surface area measurements 134, 179
synthol analysis by silica gel percolation 236
thermal decomposition of ethylene oxide by infra-red spectrometry 202
thermal decomposition of polymers 242
thiophene determination 200
thiophene in gasoline 133
water in gases 95, 133
water vapor in gaseous mixtures 239
x-ray spectrometer 15

APPLIANCES 1, 108, 227
broiler design 142
burner design 47, 108, 167
burners 2, 24, 25, 47, 64, 167, 189, 190, 208
draft diverter 227
ignition 2
incinerator 167
LP-gas 219, 227

LP-gas regulations 65
plug-in gas connector 1
ranges 80, 108, 142
space heaters 25, 166
standards 24, 25
statistics 24, 26
ventilation hood 80
venting 25

AZEOTROPES
composition and boiling points of binary 95
correlation of data 96

B

BURNER DESIGN 24, 25, 26, 46, 47, 64, 82, 108, 142, 143, 167, 190, 208, 228

C

CARBON BLACK 82
adsorption and pore size measurements 233
adsorption swelling 240
manufacture by fluidization 170
statistics 223
surface area measurements 134

CARBONIZATION
coal 4
coal and breeze blends 3
coal and shale 211
coal preparation 4
coke breeze 4
coking pressure measurement 146
distillation of asphaltic rock 216
equipment 49, 169
low-temperature 54, 85
refractory materials in a carbonizing plant 49
with steam 83

CATALYSIS, heterogeneous 40

CATALYSTS
activity determination 70
alumina for vapor phase dehydration, deaminations 157
carbiding and hydrocarbon synthesis 10
carbon deposition on face 111
chromium oxide as carrier 157
cobalt carbide 70
cracking 26, 89
decomposition of carbon monoxide 158
detoxification of catalyst poisons 240
Fischer-Tropsch 11, 33, 54, 71
for coal hydrogenolysis 158
for hydrocarbon synthesis 53, 89
for hydroforming 10
for production of butadiene from ethanol 15
for reforming hydrocarbons 193
hydrogenation 99
in dehydrogenation 153
iron carbides 159, 176
kieselguhrs as carriers 34
particle size determination 36
reduced cobalt 175
regeneration of spent catalyst in fluid catalytic cracking 10
structure and activity of chromium aluminum oxide 157
surface study 128
testing 16
water gas conversion 130

CHANGEOVER 213, 229

CHEMICAL ENGINEERING, (see also various operations, such as ADSORPTION)
particle shape and free settling rates 58

COAL
adsorption-swelling 240
air drying 83
anodic oxidation 209, 229
ash slags 81
blending for carbonization 3
bulk density 94
carbonizing properties 4, 169
composition 191
constitution 4, 48, 145
conversion to oil and gas 142
density 191
drying 191
electrolytic oxidation 148, 209
for gas manufacture 146
formation 4
free-swelling index 84
gasification 145
German research and development 29
handling 4
hydrogenation 129, 145, 158
low-temperature carbonization 54
measuring rates of flow of coal-air mixtures 208
moisture content by distillation 156
moisture determination 21, 35, 177, 199
organic sulfur in 94
particle sedimentation 39
properties 149
pulverized 144, 211, 232
reactivity to air and oxygen 85
research 6
sampling for analysis 13
solvation and hydrogenation 210
strength measurement 230
structure 4, 191
sulfur and nitrogen 7
thermal expansion 191
total carbon 55
total hydrogen 94
utilization 4, 48, 145

COKE
characteristics of foundry coke 83
utilization 83

COMBUSTION (see also BURNER DESIGN) 26, 46, 65, 81, 228
aerated burner flames 46
carbon filaments 135
coal 5, 149
coke 26
equipment 5, 85, 210
flame propagation 218
flame speeds 217
gaseous 81
ignition 168
internal combustion engines with LP or natural gas 67
natural gas in boilers 144
of hydrocarbons 74
oxidation of sulfur dioxide 179
pulverized coal 144, 211, 232
spark ignition 126
town gas 28
with oxygen and oxygen-enriched air 168

COMPRESSORS AND COMPRESSOR PLANTS 7, 8, 30, 32, 43, 50, 53, 67, 69, 86, 110, 126, 127, 150, 174, 197, 212, 214

CONSTRUCTION MATERIALS 246
alloy steels 165, 220
alloys for gas turbines 2, 48
alloys used with methane-hydrogen mixtures at 1000°C 208
corrosion resistant 62, 138, 165, 185
heat resistant alloys 118
high pressure gas wells 105
high temperature 103
low temperature insulation 138, 206, 220
paints for gasholders 246
pipe lines 61, 63, 105

CONTROLS AND INSTRUMENTATION 184
automatic control 137, 219, 230
check-valves 76
continuous vertical retorts 210
control valve selection 42
deethanizers 42
for gas-fired furnaces 190
gas distribution 191
gas operations 212
gas-works and coke-ovens 164
high temperature control circuit 206
maintenance 220
mass spectrometer type 117
pipe lines 19, 42, 104, 219
process control 117
process heater 245
speed control 103

CORROSION
alloys 165
atmospheric corrosion of ferrous metals 185
by ammonia and hydrocyanic acid 28
carboseal treatment 115
cathodic protection 22, 77, 138, 186, 196, 206, 212
condensate wells 86, 87, 138, 171, 185
cracking units 11
heat-exchanger equipment 185
inhibitors 22, 62, 87, 235
meters 105, 138
of chimney liners 62
oil-well equipment 44

organic coatings 117
paint 206
petroleum industry 105
pipe lines 30, 62, 77, 139, 165, 196
rust preventives 62
underground 62, 77, 186, 206, 246
underground structures 186, 206
well-casing 138

CRUDE OIL
analysis 175
bibliography of analyses 175

D

DEHYDROGENATION 181
butane dehydrogenation pilot plant 153
of ethylbenzene 16, 99

DEWCEL 199

DIESEL ENGINE 47

DISTRIBUTION 140
automatic controls 191, 212, 233
changeover 213, 229
corrosion 115
corrosion of meters 105, 138
design 123, 150
flow 9, 32, 53, 69, 110, 127, 174, 197, 214, 234, 235
FPC regulations 224
governor loaders 172
instrumentation 210, 230
leakage 8, 28, 88
load forecasting 68
LP-gas 143
mechanization 120
meters 19, 117
peak load 9, 48, 68, 84, 109, 110, 122, 145, 170, 173, 192, 193, 211, 231, 233
pipe line leaks 88
pipe lines 234, 235
pressure flow rates 230
pumping pressures 123
removing dust from gas mains 146, 191
sampling gas 234
sendout gas nomographs 193
weather-sendout relationship 173

DISTILLATION
binary 218
calculations 244
comparative importance of variables 113
control by means of refractive index measurements 101
distribution curves 243
fractionation 218
low-temperature 216
multi-component 114, 181, 182
nomograph for low-boiling hydrocarbons 17
process design methods 18, 101, 102, 114, 161, 181, 182, 218
terms 100
ternary 19, 60
vacuum 205
zygograph 218

DRYING, by LP-gases 152

E

ELECTRON MICROSCOPY 156, 201

ELECTROSTATIC SEPARATION 132

EQUILIBRIA
carbon, oxygen, steam reactions 37
composition of gaseous systems 134
effect of temperature on coefficients 178
equilibrium flash nomograph 182
gas condensate fluid 97
hydrocarbon systems 76
in binary systems 201
methane-n-butane-water system in two and three phase regions 159
nomograph for vapor-liquid equilibrium calculations 76
PVT data for oxygen 201
review 241
vapor-liquid for ternary mixtures 242
vapor phase reactions 113

EQUIPMENT 219
agitators 17, 103
agitator selection 137
atomizing and liquid spray nozzles 60
blender efficiency 183
boiler maintenance 137
burners 81
cyclone dust collectors 184
cyclone dust separator 19
de-ethanizers 42
design 7, 18, 30, 43, 50, 67, 101, 102, 114, 161, 181, 182, 218
diesel engine 47
flange design 116, 206, 245
flow meter 20
fractionating columns 22, 77, 116, 164
gas manufacture and distribution 210
generator 65
heat exchangers 43, 61, 103, 184
high vacuum 21
industrial oven 210
LP-gas 219
LP or natural gas carburetor 67
mechanization in the gas industry 211, 231
mixing 205
mixing vessels 43
narrow-boiling fractionating columns 61
natural gas booster station 29, 66, 125, 150
piping system construction 184
pressure vessels 103
process heater 245
pulverized coal-fired furnace 81
pumps 116, 245
temperature measuring elements 185
vapor-phase reactions 42
welded process vessels 104

EXPLOSION, initiation by grit particles 241

EXTRACTION
absorber extraction efficiency 57
liquid-liquid and vapor-liquid 41

F

FEDERAL POWER COMMISSION 1, 224

FISCHER-TROPSCH SYNTHESIS
11, 55, 113, 128, 129
application of fluid catalyst technique 128
catalysts 54
chromium oxide as catalyst promoter 157
cobalt carbide 70
cobalt catalyst 33, 71
cost of gasoline from natural gas 89
diesel oil 90
fluid catalyst 33
iron carbide as intermediates 176
iron catalyst fluidization 215
laboratories and pilot plant 189
product distribution 158
properties of reduced cobalt catalysts 175
review 129
unreduced cobalt catalysts 33
x-ray studies of carbon monoxide 11
water gas and coke oven gas 5

FLOW OF GASES 179

FLUID FLOW 163
at low pressure 18
atomization of liquids 60
contact time-space velocity relation 74
dimensionless groups 40
granular masses 135
in artificially roughened pipes 75
in porous media 75, 218
influence of packing density 41
pressure drop in tube banks 60
pressure drop through packed tubes 18, 219
radial turbulent flow 58
suspensions 204

FLUIDIZATION 183, 204
in making activated carbon 170
in non-catalytic operations 40
of an iron Fischer-Tropsch catalyst 215
of solid particles 100
petroleum industry 12, 89, 128

FRACTIONATION
columns 101, 164
design of fractionators 116
instrumentation and control 244
liquid extraction 205, 244
multi-component 102, 181, 244
narrow-boiling-range columns 22, 61, 77
process design methods 18, 59, 101, 102, 114, 116, 161, 181, 182, 218
towers 245

FUELS
characteristics 140
comparison 121

FUEL OIL 56

G

GAS ANALYZER 155, 217

GAS HOLDERS, see HOLDERS

GAS INDUSTRY 1, 23, 108
A.G.A. research program 207
comparative rates 224
comparison of fuels 23
costs and prices 140, 227
fuel outlook 223
Gulf Coast research activity 166
house heating statistics 207
natural gas in the national economy 224
rates 225
recent progress 24
review of 1947 23
statistics 108
steel requirements 121
summary of British industry 140

GAS TURBINES 209
comparison with steam turbines 28, 209
design 2, 27
for production of manufactured gas 147
in Switzerland 81
material selection 48
natural gas expansion turbine 65
power plants 2, 3, 27, 144
with waste heat boiler 228

GASES
equilibrium composition of mixtures 134
fugacities 241

GASIFICATION
anthracite silt 112
carbon, oxygen, steam reaction 37
coals 146
coke 26
coking pressure measurements 146
complete 149
cooling 84
gas oil in horizontal retorts 4, 49
powdered coal 232
producer practice 231
sub-bituminous coal and lignite 93
slagging-type producers 5
steam-carbon reaction 92, 148
underground 149
vertical retort gas plants 125
with oxygen 5, 85, 124, 148
with oxygen and steam 232
with pressure 5
with steam 91

GASOLINE, sulfur compounds in 133, 215

GENERATORS AND PRODUCERS 125, 169

H

HEAT EXCHANGERS
air-cooled 43
contra-flow 103
design 61
shell and tube types 184

HEAT PUMP 20, 43, 76, 80

HEAT TRANSFER (see also HEAT EXCHANGERS) 40, 65
air turbulence and transfer processes 162
agitator systems 17
between air and loose solids 162
coefficients for air 101
condensation of water, styrene and butadiene vapors 136
exothermic and endothermic discontinuities 161
fin structures 183
flame gases to solids 40
flow of air inside tubes 59
Fränkl regenerator packings 163
furnace walls 65
gas temperature measurement 96
high velocity vaporizers 60
in artificially roughened pipes 75
in panel heating 143
in packed solids 245
in a recirculating furnace 163
in tube banks 183
inner surface of a homogenous wall 114
into cylindrical columns of bone char 162
measurements with thermocouples 18
measuring furnace gas temperatures 168
radiative and convective rates 136
solar radiation 143
temperature measuring elements 185
through boiling liquid films 59
to boiling styrene-, butadiene-water mixtures 204
to gases through packed tubes 75
to granular materials 162
to vertical tubes in a mixing vessel 136
with extended surface 161, 162
with surface boiling 204

HELIUM 172

HIGH PRESSURE REACTIONS 40

HOLDERS AND STORAGE
coke oven gas 7
dry ice for purging 148
flame cleaning 231
LP-gas 143
oil seal holder 214
prevention of freezing of sealing water 103
underground 214

HOUSE HEATING (see SPACE HEATING)

HYDROCARBONS (see also FISCHER-TROPSCH SYNTHESIS: SYNTHESIS)
alcohol synthesis 90, 160
aldehyde preparation 98
alkylation 243
aromatics from petroleum 215
catalysts for synthesis 53
catalytic decomposition of ethane and ethane-hydrogen mixtures 98
catalytic reforming 48, 109, 193
critical temperature and molecular weight of n-paraffins 57
dehydrogenation of ethylbenzene 16
distillation 17
effect of pressure on enthalpy 242
ethylene from coke oven gas 230
ethylene purification 5
for synthesis gas production 92
from carbon monoxide and hydrogen 158
from LP-gases 173
gas-processing plant production 54, 141
heat capacity, heat of fusion and entropy of benzene 135
heats of isomerization and heats of vaporization 38
heat of vaporization 37, 97
hypersorption unit 182
ignition energies of methane, oxygen inert gases 37
ignition temperatures 98
infra-red absorption bands of carbon dioxide, methane and ethane 38
infra-red absorption spectra of the butanes and pentanes 202
infra-red spectra 17
knock characteristics 203
low temperature oxidation 134
methane-n-butane-water system in two- and three-phase regions 159
minimum ignition energies 159
oxidation 111
oxidation of methane 39
physical constants 57
properties of alkylbenzenes 112
properties of alkylcyclopentanes and alkylcyclohexanes 56
purification by adsorption 40
pyrolysis of methane 100
reforming in water gas sets 148, 149
solubility of water 180
sulfonylation 161
sulfur determination 238
synthesis catalysts 89, 198
synthesis of methane 179
thermodynamic properties 38
thermodynamic values 135
2, 2, 4-trimethylpentane 241
vapor-liquid equilibria 76
vapor pressures and Antoine equation constants of C_3 to C_5 39
vapor pressure—temperature relation 57
viscosity of vapors 180

HYDROGEN 92, 193, 232

HYDROGEN SULFIDE 134

HYDROGENATION (See also FISCHER-TROPSCH SYNTHESIS, SYNTHESIS) 33, 129
coal 129, 158
nickel catalysts 99
of carbon monoxide 129
of catalytically cracked naphtha 9
vanadium oxide catalyst 99

HYPERSORBER UNIT 176

I

INDUSTRIAL FURNACES 4, 26, 81
billet heating 190
control systems 190
drying ovens 189
gas cyaniding furnace 122
heat losses 27
metal processing 109
radiant tubes 82
temperature distribution 65

INDUSTRIAL HEATING
boilers 228
converting to gas 168
forging 82
gas boiler efficiencies 47
gas steam boilers 168
glass industry 227
induction heating in relation to industrial gas heating 144, 168
lumber drying kilns 167

INFLAMMABILITY OF GASES 241

INSTRUMENTATION (See CONTROLS AND INSTRUUMENTATION)

ISOMERIZATION 181

K

KINETICS
absorption and chemical reaction 178
irreversible consecutive reactions 178
review 178, 241
synthesis of methane 179
2,2,4-trimethylpentane 241
use of differential analyzer 179

L

LAUNDERETTES 25

LIQUEFACTION OF GASES 172

LP-GASES 172
absorption plant 172
ammonia distribution 50
appliance regulations 65
appliances 219, 227
bulk plant 151
burner design 167, 190
butane-propane legislation 23
central station 195
comparison with other fuels 152
cooperation with natural gas interests 225
engine 169
exports 166
for aircraft fuel 28
for peak load 68, 170
for petrochemcials 173
generator sets 65
installation of distribution and storage facilities 143
legislation 23
production 52
propane-air standby plant 31
propane production 9
recovery 31, 68, 87
safety 52, 172, 213
space heater 80
statistics 1, 23, 45, 64, 166, 225
storage 8, 9, 77, 87, 194, 195, 213
supplies of propane and butane 195
tank car regulations 214
transfer 195
underground storage 197

M

MAINTENANCE
boiler 137
continuous vertical retorts 210
gas mains 146, 191
holders 148, 231
instrument 220
mechanization of gas plant 85
nitrogen purging of pipe lines 195
pipe lines 117, 171, 173
piping system construction 184
stand-by plants 231
turnarounds 165

MANUFACTURED GAS
benzol recovery 28, 209
catalytic cracking of hydrocarbons 84
catalytic reforming of hydrocarbons 193
coke oven gas 122
coke oven recovery train 84
combustion characteristics 28
continuous vertical retorts 210
costs 140
determination of hydrogen sulfide 72
determination of organic sulfur 156
enrichment with natural gas 69
ethylene recovery 230
factors affecting standardization 109
from sub-bituminous coal and lignite 93
gas oil gasification 4
gasification of oil in horizontal retorts 49
gasworks effluent treatment 86
generating steam at a carburetted water gas plant 4
high Btu gas 123, 147
hydrogen sulfide removal 5, 84, 123, 124, 169
instrumentation 164, 210
mechanical handling 169
mechanization of plant 85, 211, 231
oil gas 29, 192, 193, 211, 229
organic sulfur 5, 94, 156
oxygen oil gas 192
producer gas 38, 85, 146
producers 146, 231
production using gas turbine cycles 147
purification 211
purification and by-product recovery 147
purification by oil washing 6
reformed gas 193
reforming of hydrocarbons in water gas sets 148
relation to natural gas 127
removal of tar, naphthalene and ammonia 147, 192
storage of coke oven gas 7
summary of British gas industry 140
synthesis gas 7
tail gases 66
vertical retort plants 125
water gas from pulverized coal 91
with oxygen 85, 124

MASS SPECTROMETER 14
free radical detection 112
hydrocarbon mixture analysis 72, 130
mass spectra of organic compounds 201, 202
process control 117
thermal decomposition of polymers 242

MASS TRANSFER 40
in packed solids 245
in tube banks 183

METERS
corrosion 105, 138
differential type 104
dry gas meter 19
flow meter for measuring input to water-injection wells 20
graphs for estimating gathering system meter run sizes 117
high pressure 116
orifice 117
subsurface 21

MICROEFFUSIOMETRY 94

MIXING
agitator design 17
agitator power consumption 103
agitator selection 137
blender efficiency 183
equipment design 205
heat transfer to vertical tubes 136
internal fittings for mixing vessels 43
mixing technology 205

N

NATURAL GAS
acidizing 50, 194
analysis by low temperature-low pressure fractionation 132
booster stations 29, 66, 125, 150
bottom-hole pressure gage calibration 125
clay and mud cake removal 67
combination scrubbing, dehydration, desulfurization plant 234
compressibility factor 127, 197
compression, dehydration plant 150
compressors 7, 8, 30, 43, 50, 67, 212
condensate production and cycling 8, 30, 51, 67, 150
conservation 150, 151, 152, 233
cycling 8, 51, 53, 67, 87, 126, 171, 194
cycling plant 52, 171
dehydration 150, 213
differential type meter 104
drilling 174
dual completions 8
effects of added nitrogen on compressibility 127, 152
effect of pressure maintenance on oil recovery 69
estimation of reserves 174, 234
for chemical production 16
for enriching 69
for kiln drying of lumber 66
high pressure gas measurement 116
holder 214
hydrogen sulfide determination 233
hydrogen sulfide removal 196
importance in the national economy 224
in diesel locomotive 3
injection program 151
interchangeability 110
liquid product production 64
meters 104, 117
meters for measuring the flow of fluids at different levels 21
nitrogen removal 110
operating problems 152
pH control—sulfur burner 215, 235
phase relations of gas condensate fluid 97
pipe lines 196
pipe line compressors 86
pipe line statistics 227
prices 227
processing plant statistics 225
production 32, 51, 110, 126, 171, 196, 197, 215, 234, 235
production equipment 216
production statistics 45
purification 151, 174, 176, 213
purification and dehydration 151
rates and prices 224
reforming 149
replacing valves on drip and take-offs 104
reserves 45, 79
secondary recovery 152, 194
statistics 24, 79, 207, 225
storage as hydrate 88
storage in underground pipe sections 197
survey of major projects 120
Texas fields (statistics) 107
transmission 171, 173
storage 197, 214
water-flood spacing 31
water-injection wells 20

NATURAL GAS ACT 64, 120, 141, 223, 224

NATURAL GAS INDUSTRY 9

NATURAL GAS INVESTIGATION 64, 225

NATURAL GASOLINE 31, 68
absorption plant 172
annual review (1947) 46
annual plant survey (1947) 79
compressors 126, 171
grade and yield estimation 213
Hastings plant flow sheet 8
"midget" plant 88
plant construction statistics 79, 121
plant data 212
plant design 213
plant details 127
plant with propane refrigeration unit 194
process design 51
production statistics 46, 79
Tomoconnor plant flow sheet 194

NITROGEN
effects of addition to natural gas 127, 152
heat of adsorption on carbon black 239
removal from natural gas 110

O

OXIDATION 39, 111
OXYGEN
ignition energies 37
manufacture 29, 137, 192
PVT data 201
thermodynamic functions 98

P

PARTICLE SIZE
distribution 14
measurement 73

PEAK LOAD 9, 23, 233
catalytic cracking of hydrocarbons 84
catalytic cracking process 145
catalytic cracking unit 170
catalytic reforming of hydrocarbons 48, 109
Dayton-Faber oxygen oil gas process 192
economics 173
high Btu oil gas 192
hydrocarbon oil for a carburetted water gas plant 231
LP-gas 68
LP-gas standby plant 31
natural gas for enrichment 110
oil gas production 193, 211
stand-by plants 231
weather-sendout relationship 173

PERMEABILITY 115, 218

PETROLEUM
aromatics determination 69, 199
correlation of A.S.T.M. true boiling point and flash vaporization curves 127
corrosion 11, 44, 105
cycloversion process 32
fluid bed catalytic cracking plant 53
fluid catalyst cracking process 12, 89
fluid catalyst technique 128
fluid solids technique 12
hydrocarbon conversion at high temperature and pressure 153
hydroforming catalysts 10
hydrogen sulfide purification 12
hypersorption unit 182
mercaptan removal 154
Perco catalytic desulfurization and catalytic reforming unit 175
petrochemical industry 154
petrochemical processes (flow diagrams) 216
polyform process 235
production 32
production equipment 216
production of high octane gasoline 153

refinery equipment corrosion 185
refinery processes review 90
regeneration of spent catalyst in fluid catalytic cracking 10
reserve statistics 79, 226
review of 1947 120
self-contained naphtha polyforming 235
solidification 154
statistics 166
sulfur determination by lamp method 200
suspensoid catalytic cracking process 12
tank car regulations 214
thermal cracking 34
thermal properties 180, 242
thermodynamics 41, 60, 102, 164, 203
Thermofor catalytic cracking unit 34, 55, 235
Thermofor pyrolytic cracking process 198
water treatment in gasoline plants 216

PIPE LINES 105, 234, 235
aluminum 61, 196
automatic controls 19, 42
automatic welding 173
check valves 76
cleaning 171
compressors 86, 196
construction 46, 107, 142, 226
construction methods 196
construction planned 141, 226, 227
control valve 219
corrosion 30, 62, 77, 139, 165, 196, 212, 246
cost of leak repair 88
electrically bonding pipe couplings 170
inspection and maintenance 173
instrumentation 214
leak detection 8, 28, 50
maintenance 117
nitrogen purging 195
plastic coating 165
removing gum formations 86
replacing valves on drips and take-offs 104
seamless line pipe 63, 105
statistics 46, 107, 142, 207, 226, 227
transcontinental line 173

PORE SIZE DISTRIBUTION 179
PROPERTIES
adsorption of gases on carbon dust 239
burning velocity 36
carbon filaments 135
compressibility 127, 152
critical temperature and molecular weight 57
critical volumes, critical temperatures and coefficients of expansion of liquid 159
densities of liquids 133
effect of pressure on enthalpy 242
effect of steam on alumina transitions 36
effect of temperature on liquid phase coefficients 178
equilibria 159
explosibility of acetylene 37
explosion initiation 241
fugacities in gas mixtures 241
heat capacities of gases 97
heat of combustion 177
heats, equilibrium constants and free energies 56
heats of adsorption of nitrogen on carbon black 239
heats of vaporization 37, 97
hydrogen-nitrogen mixtures 180, 203
hydrogen sulfide 134
ignition of explosive gas mixtures 37
ignition of gases and vapors 37
ignition of gas mixtures 159
ignition temperatures 98
kinetics and equilibrium review 241
liquid-vapor equilibrium relations in binary systems 201
oxygen 201
penetration of liquids into solids 218
solubility of water in hydrocarbons 180
specific gravity 71
specific heat determination 131
specific heat measurement 36
surface tensions of liquids 135, 159
thermal properties of petroleum oils 180, 242
2,2,4-trimethylpentane 241
vapor pressure 39, 57, 160, 242
viscosity, density and vapor pressure of liquids 15
viscosity of vapors 180

PURIFICATION
benzol and sulfur removal 6
dehydration of natural gas 213
desulfurization of petroleum 175
ethylene purification by absorption 17
gasworks effluent treatment 86
hydrogen sulfide removal 5, 12, 84, 123, 124, 196
manufactured gas 151, 211
mercaptan removal from petroleum 154
natural gas 151, 174, 213
natural gas scrubbing, dehydration, desulfurization plant 234
of gases by selective adsorbents 196
oxygen removal from gas streams 238
Staatsmijnen Otto process 169
standard hydrocarbon samples 70
synthesis gas 92
synthetic gasoline 236
tar, naphthalene and ammonia removal 147, 192

PYROLYSIS
hydrocarbons 198, 216
methane 100
literature review 211

R

RADIANT HEATING (see also SPACE HEATING) 25, 65, 122, 190, 208

REFRACTORIES 44, 49, 62, 118, 139

S

SAFETY
accident prevention 189
fire fighting equipment 120
fire protection 140
handling LP-gases 52, 172, 213

SHALE OIL 55, 111, 129

SPACE HEATING 20, 25, 76, 80, 167
basementless houses 208
buried copper pipe tests 65
coal and gas comparison 228
combination oil-gas burner 166
cost comparison 228
floor panel system 108
heat source systems 167
installation 2
panel heating 143
radiant and convection types compared 190
radiant heating 65, 122
solar radiation 143
statistics 207, 227

SPECTROSCOPY
correlation of vibrational absorption with molecular studies 159
infra-red absorption bands of carbon dioxide, methane and ethane 38
infra-red absorption spectra of the butanes and pentanes 202
infrared analysis of organic mixtures 217
infra-red emission spectra of flames 202
infra-red for determination of olefins 217
infra-red gas analyzer 201
infra-red region prism spectroscopy 38

infra-red spectra of hydrocarbons 17
infra-red techniques for C_5 mixtures 94
organic analysis 132
quantitative analysis 15
Raman spectra of saturated aliphatic hydrocarbons 202
spectrum of carbon monoxide-oxygen reaction 202
sulfur determination 238
thermal decomposition of ethylene oxide by infra-red spectroscopy 202
x-ray 179

STATISTICS 23
cost of gasoline from natural gas 89
comparison of fuels 23
expansion during 1947 122
house heating 207, 227
LP-gas 1, 23, 45, 166, 195, 225
liquids from natural gas 64
liquid fuel production 166
mineral production in 1947 45
natural gas 24, 45
natural gas transmission 207
natural gasoline 46
natural gasoline and cycling plants 46, 79, 121
petroleum reserves 226
petroleum review 120
pipe line 46, 107, 141, 142, 226, 227
reserves 45
review of 1947 23
steel requirements 121
survey of natural gas projects 120
survey of natural gasoline plants 79
Texas natural gas fields 107

SYNTHESIS (see also FISCHER-TROPSCH SYNTHESIS: SYNTHESIS GAS)
acetylene from methane 75
alcohol 90
aromatics from petroleum 215
catalysts 15, 53, 89
chemicals 32
from carbon monoxide and hydrogen 158
from coal 142
fuels 34, 54, 55, 71, 85, 129, 141, 176
gasoline 236
hydrocarbons 141
hydrogenation of carbon monoxide 129
low temperature oxidation of hydrocarbons 134
OXO synthesis of alcohols 160
of aldehydes from alkenes 98
of hydrocarbons with sulfur containing catalyst 198
of methane 179
petrochemicals 154

SYNTHESIS GAS
from anthracite silt 112
from coal 232
from coke oven gas 7
from light hydrocarbons 92
from methanol 91
production 90, 91, 92, 193, 232
purification of synthesis gas from pulverized coal 92

T

THERMAL DIFFUSION COLUMNS 76

THERMODYNAMICS
azeotropes 96
binary azeotropes 96
burning velocity 36
effect of pressure on enthalpy of petroleum vapor 242
exothermic and endothermic discontinuities 161
fugacities in gas mixtures 241
functions for molecular oxygen 98
heat capacities of gases 97
heat of adsorption on carbon black 239
heat transfer to granular materials 162
heat transfer with extended surface 161
hydrocarbons 37, 38, 97
hydrocarbon processing 41, 60, 102, 164, 203
ignition of gas mixtures 97
ignition temperatures 98
isomers among paraffin hydrocarbon 38
liquids 159
measurement of gas temperatures 96
petroleum oils 180, 242
properties of benzene 135
properties of hydrocarbons 38
properties of hydrogen-nitrogen mixtures 180, 203
properties of hydrogen sulfide 134
standard free energies of formation 135
values for hydrocarbons 135

TOWN GAS (see MANUFACTURED GAS
TRANSMISSION
cleaning transmission lines 86
compression and compressors 30, 32, 53, 69, 110, 126, 127, 174, 196, 197, 214
flow 197
friction factor charts 173
governor loaders 172
high pressure 197
internal pressure testing 9
long line gas dispatching 174
meters 104, 116
pipe lines 50, 63, 88, 105, 171, 214, 226, 234, 235
sampling gas 234

U

UNIT OPERATIONS, annual review 61

V

VACUUM TECHNOLOGY 21
design 114
evacuation 40
high temperature calculations 18
measurement 164
review 163

VAPOR-PHASE REACTIONS 42, 113

The Institute of Gas Technology was founded in 1941 by members of the Manufactured and Natural Gas Industry to accomplish the following objectives:

1. *To train a selected group at the graduate level for employment in the Gas Industry as research, technical and administrative assistants.*

2. *To prepare and disseminate information of interest to the Gas Industry.*

3. *To conduct basic and applied research in all phases of the Gas Industry using contributions and dues of member companies.*

4. *To conduct basic and applied research in all phases of the Gas Industry under individual, group and association sponsorship.*

Inquiries may be directed to:

DIRECTOR
Institute of Gas Technology
3300 South Federal Street
CHICAGO 16, ILLINOIS